

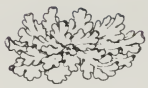


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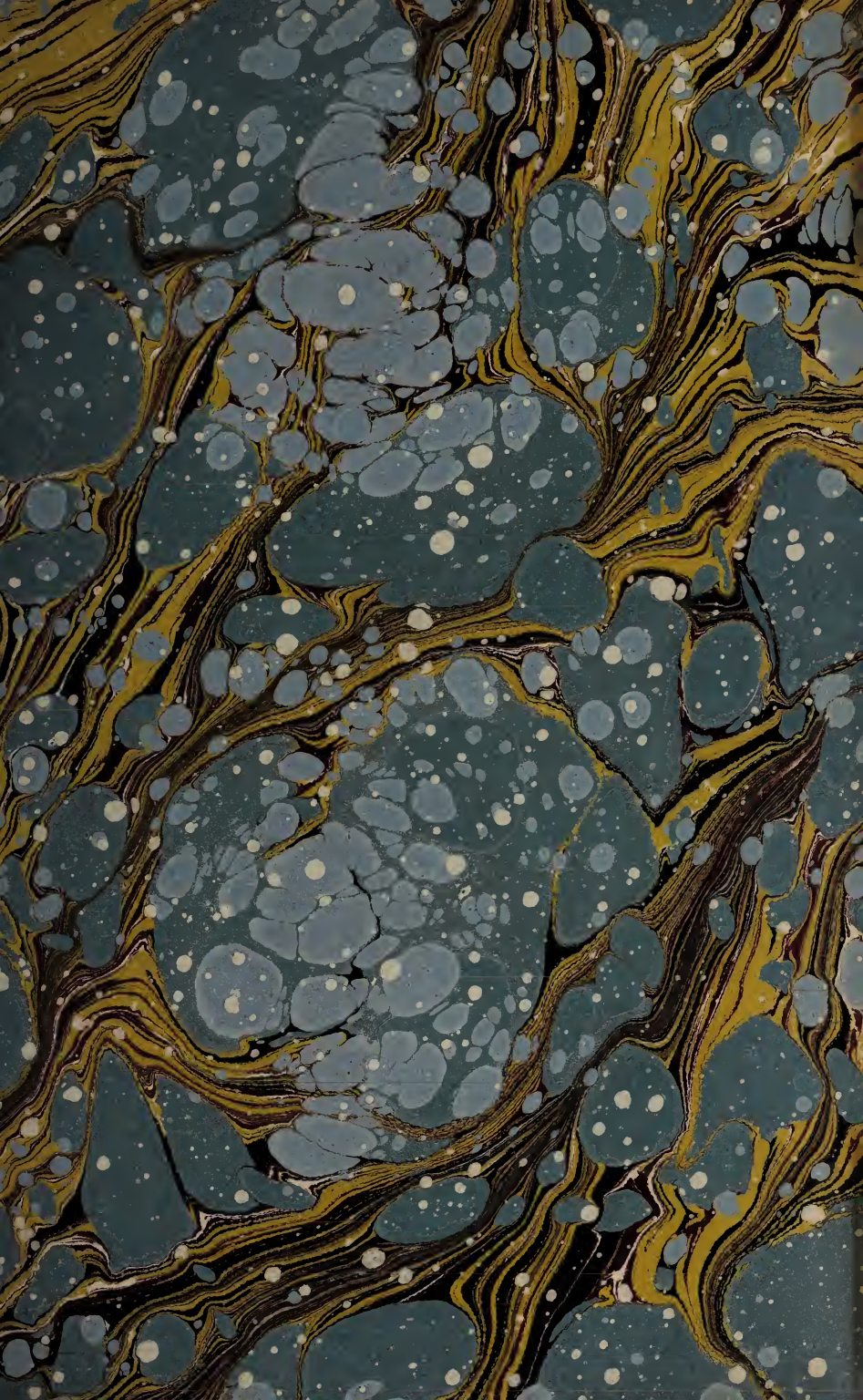
CRYPTOGAMIC BOTANY







Grevillea,

A QUARTERLY RECORD OF

CRYPTOGAMIC BOTANY

AND ITS LITERATURE.

EDITED BY M. C. COOKE, M.A., A.L.S.,

Author of "Handbook of British Fungi," "Fungi, their uses," &c., "Rust, Smut, Mildew, and Mould," &c., &c.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

AUSTRALIAN FUNGI.

By C. Kalchbrenner and M. C. Cooke.

(Continued from Vol. viii. p. 154.)

Polyporus (Mesopus) perdurans, *Kalch.*

Totus ferrugineus, habitu toto *Pol. perennis*, Fr.; sed pileus dense zonatus radiatimque striolatus, *glaber*, subnitens; stipes curtus, ad basim bulbose incrassatus, velutinus; pori mediocres, subangulati, acuti.

Tasmania boreali-orientalis (Mueller).

Pileus 1-1½ unc. latus, stipes vix unciam longus, 4-5 mm. crassus.

Hydnum (Apus) delicatulum, *Klotsch. Fr. Ep.*, 515.

Pileo effuso-reflexo, coriaceo, tenui, margine reflexo, augusto, lutescente, pagina fertili albescente; aculeis tenuissimis, regularibus, distantibus, fulvis punctata.

Richmond River (Mueller).

Aculei fere setacei.

Irpex hexagonoides, *Kalch.*

Totus albus. Pileus suberoso-coriaceus, postice porrectus (pendulus?) pollicem circiter latus, inconspicue zonatus, molliter villosus, dentibus reticulo favaceo, eximie regulari impositis, foliaceis acutiusculis.

Richmond River (de Mueller).

Hymenium primo favaceum, ut in *Hexagona*, demum in dentes foliaceos, unilaterales elevatur.

Stereum semilugens, *Kalch.*

Membranaceum, subcæspitosum, sessile, lateraliter confluens. Pilei explanati, semiorbiculares, margine crebro lobati, ruditer tomentosi, demumve glabrescentes, zonati, e ferrugineo-umbrini; hymenium læve, glabrum, griseum, vetustate atro-cinereum, subtilissime rimulosum.

Rockhampton (Mueller).

Fere papyraceum, a *Stereo membranaceo*, Fr. et *Stereo Boryano* Fr., colore inconsueto distinctum.

Thelephora Archeri, *Berk. in Tasmanian Flora.*

On the ground. Delegate Hill (Mueller).

Corticium miniatum, *Cke.*

Effusum, adnatum, miniatum, ambitu fimbriato albicante; hymenio subpulverulento, fatiscente ; subtus umbrino.

On bark. Queensland (Baron von Mueller).

When dry the hymenium resembles patches of dried blood, which cracks off and exposes the umber substratum.

Phallus (Cynophallus) papuasius, *Kalch.* **Mutinus papuasius,** *K., in Grevillea iv.,* 74.

Peridio exteriori laxo, cum stipite gracili, subflexuoso, cavo, celluloso pallido. Receptaculum ovato-conicum, stipitem crassitic superans, læviusculum, nigrum.

Australia. Queensland, prope Rockhampton, in terra, leg Thozet, com. de Mueller.

Phallus (Dictyophallus) aurantiacus, *Montg.,* var. **discolor,** *K.*

Pedunculus cylindricus, *subæqualis*, celluloso-cribrosus, aurantiacus, peridio ovato, albo, quintuplo longior; pileus digitaliformis, præter marginem liberum adnatus, apice primum clausus, dein pervius, tenuiter reticulato-rugosus, stipiti subconcolor, demum nigricans. Sporæ ellipticæ, ·002 × ·0015 mm. diam.

Australia orient. subtropica, ad Wigton (Mueller).

In specimine quod ad est (juniore) pileus griseo-lutescens est, in altero nigricans.

Phallus (Hymenophallus) tahitensis, *Schlecht, Syn.* **Phallus Dæmonum,** *Hook. in Beechey Voy., p.* 78.

Pedunculus cylindricus, vix superne angustior, lacunis exiguis tectus; laxe amictus velo ultra medium ejus dependente, undulato-plicato, interstitiis mediocribus, subrhombeis reticulato, basi integerrimo ; pileus ovalis, medio crassior, apice late pervius, dense reticulato-rugulosus, basi membrana brevi, plicatula cinctus, pedunculo paullulum latior, volva angustior.

N. S. Wales. Richmond River (Mueller).

Differt a *Ph. Dæmonum*, Rumph., velo longiore, laxius reticulato pileoque fusco-nigro nec gilvo.

ANTHURUS, n. gen., *Kalch. et M. Ow.*

Volva ovata, truncata, vel leviter lobata; stipes cylindricus sursum dilatatus, *late pervius*, in 7-8 lacinias simplices, lanceolatas divisus; stratum sporiferum paginam interiorem laciniarum *totam* occupans.

Genus *Lysuri* stipitem ore-plus-minus constrictum (nec late pervium) habet et lacinias numero pauciores, 4-5. In *Aseroë* et *Calathisco* stratum sporiferum moro *basim* laccinarum occupat; ceterum-si libet *Anthurus*. *Lysuro* ut *subgenus* adjungi potest.

Anthurus Mullerianus, *Kalchb.*

Volva basi coma densa radiculorum aucta; pedunculus inferne tenuis, sursum cupulari, vel subinfundibuliformi dilatatus; luteo-rubescens ; laciniæ octo, basi sinu discretæ, erecto-patentes, apice recurvatæ, lanceolatæ, pagina interne sinuloso-rugosa, rubra; massa sporifera atra.

Australia (Mueller).

Volva 2 cent. alta, $1\frac{1}{2}$ cent. lata, exsiccatione fuscescens, intus

nigricans glabra. Pedunculus 4 cent. altus, prope basim vix 5 mm. crassus, superne ad 2 cent. dilatatus, parum rugulosus, haud cellulosus. Laciniæ 2-2½ cent, longæ, basi 5 mm. latæ, ut in Tulipa aut Lilio recurvatæ et sic quodammodo florem referentes.

Geaster vittatus, *Kalchbr.*

Peridium exterius membranaceo-coriaceum fornicatum, in octo circi ter lobos regulares, ex ovato, longe acuminatos, fissum ; pagina ejus inferior (externa) subglabra, alutacea, longitudinaliter rimosa, ut albo-vittata appareat ; superior (interna) strato carnoso, tenui, continuo (haud rimoso) tecta, cinereo-fusca. Peridium interius globosum, sessile, ore late conico, fimbriato-ciliato, fuscidulum. Sporæ cum capillitio denso, fuscæ, subtiliter echinulatæ, minutæ, ·0·003 mm. diam.

Australia (Mueller).

Mediocris, peridio interiori 2 cent. lato, exteriori, lobis expansis, 9 cent. Rimæ in pagina inferiori peridii externi, non ut in *G. Micheliano*, ramoso-anastomosantes, sed simplices, lineares, subparallelæ.

Geaster striatulus, *K.* **(G. striatus,** *var.* **minor.)**

Minimis. Peridio exteriori paucifido, extus furfuraceo, ferrugineo, interiori subsessili, subconoideo-globoso, pallescente ; ore prominente conico, sulcato. Sporæ ·005 mm. diam., cum capillitio cinereo-fuscæ.

Australia. Spencer's Golf ; leg. Tepper (Mueller).

Nucis avellanæ magnitudine, laciniæ peridii exterioris 6. Minutie potissimum et indumento peridii exterioris furfuraceo, a *G. striato* conspicue differt.

Battarea Mulleri, *Kalchbr.*

Tota alba, e sporis delapsis demum ferruginea. Peridium exterius in nostro specimine deest ; interius campanulato-mitratum, insidens stipiti solido, longissimo, sursum leniter incrassato, paleaceo squamoso ; paleis subimbricatis, lineari-lanceolatis, deorsum directis (pendulis). Sporæ globosæ, verruculosæ, ·004 mm. diam., cum fibris curtis fragilibus, spiralibus, parce intermixtis, pure ferrugineæ.

Australia. Spencer Golf ; leg. Tepper (Mueller).

Species mirabilis generis miri ! Pileus 3-4 cent. latus ; stipes ad 30 cent. longus, basi ½, apice 1 cent. crassus. A. congeneribus *B. phalloides* Fr., *B. Steveni*, Fr., *B. Gaudichaudii*, Mont., jam stipite suo, toto squamis paleaceis vestito, optime differt.

Lycoperdon (Globaria) mundula, *Kalch.*

Peridium, velo floccoso, disparente, glabrum, album, nucis avellanæ magnitudine; sporæ cum capillitio carneo-rufæ, ·004 mm. diam.

Austral. Donald, leg. Dr. Curdie.

A simile *Gl. pusilla* (Pers.) præsertim colore sporarum differt.

PHELLORINA, *Berkl. (emend.)*

Peridium lentum, persistens, subcroso-corticatum, irregulariter dehiscens, includens massam conglomeratam sporarum globo-

sarum, floccis paucis, hyalinis immixtis. Stipes validus, *solidus* sublignosus, demum cavus.

Cel. Berkeley, qui pro *Phellorina* sua, stipitem cavum poscit, ipse monet, se unicum modo specimen vetustum fungi hujus vidisse; cum vero specimina plura, nuperius e regione Capensi allata et characteres generis hujus reliquos præ se ferentia, stipite solido gaudeant, conjicere licet, cavitatem stipitis modo fortuitam, a vetustate pendentem esse. Nec color sporarum flavus, inter characteres generis recipiendus videtur.

Phellorina strobilina, *Kalchbr.* **(Scleroderma strobilina,** *K., in Grevill., iv.*, 74.)

Peridio globoso-depresso, superne squamis validis, angulatis, munito, glabro pallido, demum rimose dehiscente; stipite solido, sublignoso, nudo, sursum dilatato; sporarum massa, a stipite distincta, cinereo-fuscescens. Sporæ globosæ, verruculosæ, vix pellucidæ, ·005 mm. diam.

Queensland. Rockhampton. Thozet, No. 722 (Mueller).

Peridium 5-6 cent. diam. stipes 3-4 cent. longus, 1-1½ cent. crassus; parietes peridii 2-3 mm. crassi; squamæ areolatæ frustulatim delabentes.

Dehiscendi modo et colore sporarum a genuinis *Phellorinis* differt; hinc facile novum genus.

Valsa echidna, *Cke.*

Erumpens. Peritheciis (10-20) in stromâ niveâ pulverulentâ nidulantibus. Ostiolis cylindricis, elongatis, flexuosis, exsertis. Ascis numerosissimis, clavatis, minimis (·02-·025 × ·006 mm.). Sporidiis tenuibus, curvulis, hyalinis (.004 mm. long).

On bark (Baron von Mueller).

A most distinct and characteristic species, in habit resembling *Valsa Salliæ*, Berk.

BREAKING OF THE MERES.

By W. Phillips, F.L.S.

Several of the Shropshire Meres are subject at this time of year to, what is locally known, as "*breaking*," which consists of a thick green scum being formed on the surface of the water, which lasts for a period of a week or more. It is a well-known fact amongst fishermen that it is utterly useless attempting to fish while the water is in this state, for the fish are said to be sick, and will not take the bait. If the cause of this "breaking" of the Meres be inquired about on the spot various opinions are expressed. Some people attribute it to the *seeds* of aquatic plants with which they suppose the water becomes filled, which, as we shall presently see, is not very far from the truth. G. Christopher Davies, in his little book,

a-d. Echinella articulata. e-g. Anabaena circinalis.

"Mountain, Meadow, and Mere," suggests that it may be caused by the American weed (*Anacharis alsinastrum*), but, unfortunately for this opinion, the "breaking" was observed long before the American weed became naturalised in Britain. The real cause of this phenomenon, so far as the Ellesmere Mere is concerned, is the rapid growth of a minute Alga (*Echinella articulata*, Aq.), which, multiplying at an astonishing rate, forms a dark green slimy scum which floats on the surface of the water. This Alga was figured in English Botany, tab. 2,555, so long ago as 1804, but I am not aware that any figure has been published of it since then, and that fails to give the precise structure. It is strange that Dr. Rabenhorst makes no mention of this plant in his "Flora Europaæ Algarum," although our British Manuals give an adequate description of the species (vid "English Flora," v. V., p. 498; Harvey's Manual of British Algæ," p. 187).

Having been informed by a friend that a large pool at Hawkstone, the seat of the Rt. Hon. Viscount Hill was "breaking," I obtained, through the kindness of Lord Hill, a bottle of the water for examination, and was much surprised to find that the cause of the "breaking" in this pool was a totally different species of Alga. If I am not mistaken, it is *Anabaena circinalis*, Rabh., "Flo. Eur. Alg.," sec. II., p. 183, which is, possibly the same as *Anabaena flos-aquæ*, Bory. It consists of moniliform filaments, curved in a corkscrew form, composed of nearly spherical cells, ·005, containing green chlorophyl, with here and there a colourless cell, slightly larger than the others. These colourless cells are joined to a large oblong ovate cell, ·015 × ·007 mm., replete with a dark green chlorophyl in coarse granules. These large cells drop to the bottom of the vessel containing the water, surviving the decay of the rest of the filament. The colourless cells probably part with their chlorophyl to these larger oblong cells.

DESCRIPTION OF PLATE, 134.

Fig. *a*.—*Echinella articulata*, nat. size. Filaments, 0·7 mm. long.

Fig. *b*.—Single plant enlarged about 70 times.

Fig. *c*.—Filaments more highly magnified, each with a spherical cell at the base, ·008-·01 mm., filled with chlorophyl.

Fig. *d*.—Spherical cells, with very thin walls filled with minute granules, in an active state of motion. These cells soon become empty, and the fractured remains of the cell membrane remain. I have only seen these cells once.

Fig. *e*.—*Anabaena circinalis*, Rabh., nat. size.

Fig. *f*.—Groups of filaments.

Fig. *g*.—Single filament, showing large oblong cells, with the two adjacent colourless cells.

CALIFORNIAN FUNGI.

By M. C. Cooke and Dr. Harkness.

This is a first instalment of a collection of about four hundred numbers, made during the past year by Dr. Harkness. Species already described have not been enumerated, except in rare instances where a record has been considered advisable.

Phoma Hosackiæ, *C. & Hk.*

Sparsa, punctiformis, subtecta, atra. Sporis cylindrico-ellipticis, utrinque rotundatis, hyalinis (·01-·012 × ·003 mm.).

On stems of *Hosackia glabra.* (1424.)

Chætophoma atriella, *C. & Hk.*

Atra, effusa, velutina. Hyphis erectis, simplicibus, flexuosis, cum conidiis ellipsoideis, 1-2 septatis. Conceptaculis globosis (·8-·18 mm.), brunneis, membranaceis. Sporis minutis, ovatis (.004 × ·003 mm.).

On bark of *Acer macrophyllum.* (1549.)

Vermicularia subglabra, *C. & Hk.*

Sparsa, epidermide nigrofacto tecta. Peritheciis subapplanatis, aliis glabris, aliis pilis sparsis brevibus cristatis. Sporis lunatis, hyalinis, trinucleatis (·02 mm. long).

On stems of *Helianthus.* (1599.)

Septoria helianthicola, *C. & Hk.*

Peritheciis semi-immersis, atris, maculis nigris formantibus. Sporis rectis vel flexuosis, linearibus, achrois (·03-·035 × ·001 mm.).

On stems of *Helianthus.* (1600.)

Discella olivacea, *C. & Hk.*

Sparsa, atro-olivacea, cupulæformis ($\frac{1}{2}$ mm. diam). Sporis ellipticis, utrinque sub-attenuatis, olivaceis, integris (·014 × ·007 mm.).

On stems of Nettle (?). (1325.)

Discella tenuispora, *Cke. & Hk.*

Sparsa, atro-viridis, punctiformis, applanata, margine leniter elevato ($\frac{1}{4}$-$\frac{1}{3}$ mm. diam.). Sporis rectis, cylindraceis, obtusis, hyalinis (·02 × ·0025 mm.).

On *Juncus.* (1301.)

Diplodia microscopica, *C. & Hk.*

Sparsa, tecta. Peritheciis minimis, vix conspicuis. Sporis ellipticis, pallide fuscis, uniseptatis, leniter constrictis (·01 × ·003 mm.).

On stems of *Cynoglossum.* (1267.)

Diplodia rhuina, *C. & Hk.*

Sparsa, erumpens. Peritheciis subglobosis, atris. Sporis ellipticis, uniseptatis, nec constrictis, brunneis (·025-·028 × ·01-·012 mm.).

On stems of *Rhus triloba,* with an immature Sphæria. (1328 *a.*)

Hendersonia galiorum, *C. & Hk.*

Sparsa, atra, prominulis, demum erumpens. Sporis subellipticis, utrinque attenuatis, fuscis, triseptatis, cellulâ penultimâ longitudinaliter divisâ (·02 × ·008 mm.).

On stem of *Galium.* (1389.)

Dichomera Phaceliæ, *C. & Hk.*

Sparsa, atra, erumpens, opaca, obtusa. Sporis subglobosis, vel breviter ellipticis, atro fuscis, transverse et longitudinaliter 1-2 septatis (·012 × ·009 mm.).

On stems of *Phacelia.* (1427.)

Sometimes the spores are so opaque that the septa are not evident.

Dichomera compositarum, *C. & Hk.*

Sparsa, erumpens, atra, opaca, obtusa. Sporis ovatis 2-3 septatis, merenchymatis, atro-fuscis, demum opacis (·02 × ·014 mm.).

On stems of *Artemisia* and *Achillea.* (1238, 1367, 1537.)

Glæosporium leguminis, *C. & Hk.*

Tectum, sparsum. Sporis ovalibus, hyalinis, in massam gelatinosam effluentibus (·012 × ·006 mm.).

On legumes. (1203.)

Torula glutinosa, *C. & Hk.*

Epiphylla. Maculis atris orbicularibus. Hyphis ramosis vel furcatis, brunneis. Articulis subquadratis (·0065 mm. diam.).

On leaves of *Eriodictyon glutinosum.* (1442.)

Allied to *Torula plantaginis.*

Coleosporium baccharidis, *C. & Hk.*

Epicaulinum. Soris elongato-erumpentibus (1 cm.) aurantiis, pulverulentis. Sporis concatenatis, demum liberis, ellipticis, granulatis (·05 × ·02 mm.).

On living twigs of *Baccharis.* (1257.)

With the habit of *Coleosporium pingue,* the spores when free are attenuated towards each extremity.

Macrosporum culmorum, *C. & Hk.*

Fuligineum, effusum, subcrustaceum. Hyphis flexuosis, simplicibus furcatisve, fuscis. Sporis clavatis, 3-4 septatis, hinc illic loculis divisis (·04-·05 × ·018 mm.).

On culms of maize. (1200, 1232, 1199.)

It is very difficult to characterize the closely-allied forms in this genus, but the present may perhaps be considered entitled to rank as distinct.

Trichaegum atrum, *Preuss. in Sturm Deutsch Flora.*

Sporis lævibus (·018-·02 mm. diam.).

On stems of *Scrophularia.* (1663.)

Trichaegum opacum, *C. & Hk.*

Effusum, atrum. Acervulis minutis; floccis erectis, subflexuosis, simplicibus, atro-fuscis. Sporis subglobosis, angulato-cellulosis, atris, opacis, minute granulosis (·025 mm. diam.).

On wood of *Acer macrophyllum.* (1556.)

Fusarium gallinaceum, *C. & Hk.*
Aurantium, tremelloideum, convexum. Hyphis furcato-ramosis. Sporis fusiformibus, curvulis, utrinque acutis, nucleatis (·04-·05 × ·003 mm.).
On chicken feathers. (1292.)

Leotia ochroleuca, *C. & Hk.*
Sparsa, tremellosa. Pileo carnoso, convexo, undulato, ochroleuco ; margine involuto. Stipite albo, gracili, flexuoso (1 inch). Ascis clavatis. Sporidiis cylindricis, curvulis, nucleatis (·025 × ·002 mm.). Paraphysibus quandoque curvatis, hinc illic furcatis.
On damp ground. (1371.)
Allied to *L. circinans,* but sporidia only half as long.

Stictis decipiens, *Karst. Myc. Fenn.*
Sporidiis ·12 mm. long.
On *Artemisia.* (1368.)

Stictis radiata, var. **pumila.**
Sporidiis ·23-·25 mm. long.
On *Mimulus glutinosa.* (1323.)

Stictis annulata, *Cke. & Phil.*
Sparsa, orbicularis. Cupulis depressis (·3-·5 mm. diam.). Margine albo, integro, annulato. Hymenio ochraceo vel pallido. Ascis elongato-cylindricis. Sporidiis filiformibus, subflexuosis (·16-·18 mm. long).
On bark of *Lonicera.* (1213, 1310.)
This species had previously been found in Britain by Mr. Phillips, and seems to be distinct from any form of *S. radiata.*

Ascomyces fulgens, *C. & Hk.*
Bullatum. Maculis irregularibus, læte aurantiaceis, contortis. Ascis brevibus. (?) Sporidiis subglobosis (·0035 mm. diam.).
On living leaves of *Arctostaphylos.* (1513.)
Apparently but few sporidia in each ascus, but this could not be accurately determined, as the asci were dissolved, and the sporidia agglomerated in groups of 6 to 8.

Sphæria (Pleospora) labiatarum, *C. & Hk.*
Sparsa, atra, semitecta. Peritheciis. *P. herbario* minoribus. Ascis cylindraceis. Sporidiis uniseriatis, ellipticis, succineo-flavidis, triseptatis. Loculâ penultimâ longitudinaliter divisâ (.025 × ·01 mm.).
On stems of *Marrubium vulgare.* (1488.)

Sphæria epipteridis, *C. & Hk.*
Sparsa, tecta, vel erumpens et semi-immersa, atra. Ascis clavatis, sessilibus. Sporidiis fusiformibus, hyalinis, 3-5 septatis (·022-·025 × ·005 mm. diam.).
On stipes of *Pteris aquilina.* (1288, 1290.)

Sphærella brachytheca, *C. & Hk.*
Peritheciis sparsis, tectis, exiguis (·06 mm. diam.), membranaceis. Ascis ovatis (·02 × ·016 mm.). Sporidiis ellipticis, hyalinis, uniseptatis (·008 × ·004 mm.).
On stems of *Convolvulus.* (1382.

Sphærella araliæ, *C. & Hk.*

Peritheciis gregariis, brunneis, membranaceis, epidermide tectis, in maculis orbicularibus congestis. Ascis cylindraceis. Sporidiis ellipticis, hyalinis, uniseptatis (·01 × ·004 mm.).

On stems of *Aralia californica.* (1246.)

Sphærella dendromeconis, *C. & Hk.*

Minima, sparsa, epidermide tecta. Peritheciis membranaceis, brunneis. Sporidiis biseriatis, ellipticis, hyalinis, uniseptatis, cellula infra tenuior (·016 × ·005 mm.).

On stems of *Dendromecon rigidum.* (1386.)

Sphærella acaciæ, *C. & Hk.*

Epiphylla, subgregaria. Peritheciis membranaceis, epidermide tectis. Ascis clavatis. Sporidiis biseriatis, hyalinis, sublanceolatis, medio constrictis, uniseptatis, binucleatis (·025 × ·007 mm.).

On leaves of *Acacia.* (1415.)

The sporidia appear to become ultimately triseptate, but too indistinct to be included in the diagnosis.

SAPROLEGNIA FERAX.

The subject of the salmon disease still occupies the attention of the Fishery Commissioners, and we observe that a paper on the subject has been read at the Dumfriesshire Natural History Society, in which it is maintained that the disease is aggravated, if not caused, by the presence of a vast number of bacteria in the flesh of the diseased spots. Mr. Rutherford writes :—"Sections of the muscle, when placed under the microscope, were seen to be literally one mass of life ; that life being a species of Bacteria. They are small discoid-looking bodies, which in this case I find embedded in, and moving amongst, the striated muscle fibre of the fish, and when by pressure or otherwise they are forced into the surrounding fluid, they have a power of motion, moving mostly in a sort of circular direction. In some fish that I have examined, I observed that the muscle was almost detached from the strong fibro-muscle layer of the skin, and the muscle fibres of that layer were not adhering together as in their natural state, and could be separated from each other like threads by the needle. Whether that diseased condition of that part of the skin was caused by the state of the muscle immediately below it, or by the fungus on the surface, I am not in a position to say." Afterwards he says:—"The disease was located in the muscle of the fish, and I also have some idea that it will be found to commence in the blood, caused either by the food they eat, or by some deleterious solution in the water which passes through the gills; and that the unhealthy decaying fluid or matter which will naturally pass off from those Bacteria, and exude through the pores of the skin, forms a healthy

and proper nidus for the germination of the zoospores of the fungus, which must be in those affected rivers in myriads."

It would be some consolation to the mycologist if, after all, he could feel convinced that this fatal salmon disease was not primarily caused by the *Saprolegnia*. But there are very grave doubts whether these Bacteria are not more probably the result of a certain disintegration of the substance of the flesh caused by the mycelium of the *Saprolegnia*, than a preliminary depravity of the flesh inducing the subsequent development of the fungus. However much we may dislike the conclusion that a fungus is the principal cause of so much mischief, I fear that we must accept the force of evidence which goes to show that the *Saprolegnia* appears to be the great destructive agent in this disease. It may be true, and undoubtedly is, that the constitution of the fish is in a low condition, that it is debilitated, and powerless to resist the fungoid attacks; and that this condition may be the result of various secondary causes; but the theory that Bacteria in the flesh is the primary cause, though it may be a new suggestion, can scarcely be accepted as a true one. The coincidence should be borne in mind, even if it is no more than a coincidence, that in all the great instances of devastating fungal disease, there has been an undoubtedly weakened constitution in the subject, caused by overcultivation, and in-breeding, preliminary to the attacks. Such was the case in the silkworm, and it fell a prey to "muscardine." In the potato, and it succumbed to the *Peronospora*. In the vine, and it became a victim to *Oidium*. May we not add also, in the salmon, ere it was devastated by the *Saprolegnia*; and it may yet be to the onion in Europe, and the poppy in India, unless the threatened misfortune should be averted.

EXOTIC FUNGI.

By M. C. Cooke.

The following small collections from various localities are chiefly in the Herbarium of the Royal Gardens at Kew:—

Venezuela.

The following specimens were sent by Dr. Ernst as illustrations of the diseases of the Coffee Plant. Only one is really destructive, and that has been previously described. We regret that we cannot accede to his view that it is a condition of a species of *Erysiphe*.

Pellicularia Koleroga, *Cke.* in *Grevillea.*

On leaves of *Coffea arabica*. Venezuela (Dr. Ernst).

This is the *Erysiphe? scandens*, Ernst. We have failed in finding the concatenate conidia and pycnidia as described by Dr. Ernst.

In habit it is less dense, but differs in no other respect from the Mysore specimens.

Leptostroma discoidea, *Cke.*

Epiphylla, punctiformis, sparsa, convexa, atra. Sporis minutis, linearibus, hyalinis, rectis (·006 mm. long).

On leaves of *Coffea arabica.* Venezuela (Dr. Ernst).

Resembling externally a minute species of *Microthyrium.*

Torula Sphærella, *Cke.*

Gregaria, atra. Cæspitulis sphæriæformibus, sub-globosis, compactis. Sporis cylindraceis, quinque-articulatis, constrictis, brunneis, ·018-·02 × ·004 mm., cellulis subquadratus, nec facile dissilientibus (·004 mm. diam.).

On leaves of *Coffea arabica.* Venezuela (Dr. Ernst).

Stilbum flavidum, *Cke.*

Pallido-flavidum, gracile; capitis globosis, stipitibus flexuosis, tenuibus. Sporis minimis, sub-globosis (·0015 mm. diam.).

On leaves of *Coffea arabica.* Venezuela (Dr. Ernst).

Seated, several together, upon pallid spots, similar to, and in company with, *Sphærella coffeicola.*

Sphærella coffeicola, *Cke.*

Maculæ pallidæ, subrotundatæ, margine brunneo (½-1 cm.). Peritheciis paucis, sparsis, immersis, atro-fuscis, minimis. Ascis clavatis. Sporidiis fusiformibus, arcte constrictis, uniseptatis, binucleatis, hyalinis (025 × ·0045 mm.).

On leaves of *Coffea arabica.* Venezuela (Dr. Ernst).

Not more than two or three perithecia scattered over a roundish pallid spot. Sometimes the *Stilbum* occupies the same spot.

Paraguay.

Collected by M. Balansa.

Meliola furcata, *Lev.* Ann. Sci. Nat.
On leaves. (No. 1291.)

Triblidium rufulum, *Spreng.*
On branches. (No. 1276.)

Nectria coccinea, *Fr.*
On bark. (No. 1287.)

Xylaria grammica, *Mont.*
On wood. (No. 2709.)

Puccinia pilocarpi, *Cke.*

Amphigena. Soris magnis, bullatis, in annulis confluentibus, purpureo-brunneis. Pseudosporis elongato-ellipticis, constrictis, lævibus, læte brunneis (·045-·055 × ·02-·025 mm.). Pedicellis hyalinis, elongatis.

On leaves of *Pilocarpus Selloanus.* Paraguay (Balansa, 1290).

Stereum xanthellum, *Cke.*

Coriaceo-membranaceum, ochraceo-flavidum; pileo infundibuliformi, glabro, opaco, leniter subzonato; margine undulato; stipite deorsum attenuato, tenui; hymenio pruinoso, concolori.

On wood. (No. 2700.)

Resembling *S. elegans*, Fr., in size and form, but very different in colour and texture. It has very much the appearance of new wash leather. Stem about the same length as the pileus, about one inch.

Brazil.

Polyporus (Pleuropus) sanguineus, *Fr.*

On wood. Rio Janeiro. (Glaziou, 11767.)

Polyporus (Placodermei) Australis, *Fr.*

On wood. Rio Janeiro. (Glaziou, .)

Polyporus (Placodermei), ulmarius, *Fr.*

On wood. Rio Janeiro. (Glaziou, 11772.)

Polyporus (Placodermei) lateritius, *Cke.*

Pileo suberoso-lignoso, explanato, dimidiato-sessili, sublateritio, concentrice viridi-zonato, postice tuberculoso duro, opaco; intus molli, læte lateritio; poris minutis rotundis confluenti-stratosis, ferrugineo-fuscis ($\frac{1}{6}$ mm. diam.).

On wood. Rio Janeiro. (Glaziou, 11770.)

Pileus 8 to 10 inches by 4 to 5 inches, and two inches thick behind. Perennial. Internally of a bright brick red, or almost orange red; somewhat of the colour of a red-fleshed melon. Substance beneath the hard horny cuticle not at all fibrous; soft, but firm; not so dense as in *P. ulmarius*. With a sharp knife it may be cut in slices almost as thin as paper. Pores smaller than in *P. fomentarius*.

Trametes ochroflava, *Cke.*

Ubique ochraceo-flavida; pileo suberoso, compacto, convexo applanato-ve, tuberculoso; margine sæpe concentrice sulcato; intus concolore; poris subrotundis, minutis, æqualibus, ochraceis.

On trunks. Rio Janeiro. (Glaziou, 11769.)

Pileus 3 to 10 inches by 2 to 5 inches, and from $\frac{1}{2}$ to 1 inch thick behind. Often imbricated. Pores $\frac{1}{5}$th mm. diam. Internally concentrically zoned. Tubes half an inch long, or more, according to the thickness of the pileus.

Japan.

Polyporus (Placodermei) glaucotus, *Cke.*

Pileo suberoso-lignoso, applanato, concentrice sulcato, glabro, nitido cinereo, postice gibbo; intus molli fibroso, rhabarbarino-fusco. Poris rotundis, minutis, brevibus, cinnamomeis.

On wood. Japan. (Mr. C. Welford).

Often imbricated, or with a short stem. Sometimes three or four short stems arise from a hard tuberiform mass, the size of a hen's egg, which is of the same substance as the pileus. Pilei 3 by 2 inches; 1½ inches thick at the base. Attenuated to the thin margin, which is of a shining blue-grey.

Polyporus (Placodermei) concentricus, *Cke.*

Pileo lignoso, subapplanato, lævi remote concentrice sulcato, fusco, purpureo-fasciato, intus duro, pallido, zonato. Poris minutis, rotundis (¼ mm. diam.) ochraceis, demum, cinnamomeis.

On wood. Locality uncertain.

Pileus 7 by 5 inches; 1½ inches thick behind. Tubes nearly half the thickness. Substance wood-coloured; concentrically zoned. Externally the pileus is variegated with numerous concentric purple lines. Somewhat resembling *P. fasciatus*, Fr.

India.

The following have been received from Dr. Aitcheson and Mr. Duthie:—

Podaxon calyptratus, *Fr Sys. Myc.*

On the ground. Punjab (Dr. Aitcheson).

Eaten by the natives.

Helvella crispa, *Fr.* Cke. Myco. f. 159.

On the ground. Punjab (Dr. Aitcheson).

This is acknowledged as an edible species in Europe.

Agaricus (Lepiota) excoriatus, *Schæff. t.* 19.

On the ground. Punjab (Dr. Aitcheson).

Geaster hygrometricus, *Fr. Sys. Myc.*

On the ground. Saharunpore (Mr. Duthie).

Phyllosticta marmorata, *Cke.*

Maculis niveis, numerosissimis, hinc illic confluentibus. Peritheciis paucis (1-2) semi-immersis, punctiformibus, brunneis. Sporis ellipticis, hyalinis (·005 mm. long).

On leaves of *Mallotus Philippinensis*. Saharunpore (Duthie).

Persia.

Collected in Kurdistan, Luristan, &c., by Dr. Haussknecht:—

Asteroma haussknechtiæ, *Cke.*

Peritheciis atris, minimis, in maculis nigris irregularibus congestis. Sporis arcte ellipticis, hyalinis (·006 mm. long).

On faded leaves of *Haussknechtia*. Luristan (Dr. Haussknecht).

Puccinia achilleæ, *Cke.*

Epiphylla. Soris discoideis, erumpentibus, purpureo-brunneis; pseudo-sporis elongato-ellipticis, brunneis, constrictis (·05 × ·025 mm.), episporis leniter granulatis, pedicellis hyalinis, elongatis, robustis. Protosporis n. v.

On *Achillæa albicaulis*. Kurdistan.

Puccinia gundeliæ, *Cke.*
Amphigena. Soris orbicularibus, sparsis, brunneis. Protosporis globosis, fuscis, granulatis (·028-·03 mm.). Teleutosporis immixtis late ellipsoideis vel difformibus (·032-·035 × ·02 mm.), lævibus ; pedicellis brevissimis.
On *Gundelia Tournefortii.* Kurdistan.

Puccinia heterophylla, *Cke.*
Hypophylla, vel amphigena. Soris applanatis, suborbicularibus, brunneis, pulverulentis, dense gregariis. Protosporis globosis, lævibus, pallide fuscis (·02-·022 mm.). Teleutosporis, in soris immixtis obscurioribus, ellipticis, vix constrictis, brunneis (·03-·032 × ·02 mm.), lævibus ; pedicellis brevissimis.
On *Serratula heterophylla.* Kurdistan.

Puccinia jurineæ, *Cke.*
Epiphylla. Soris discoideis, atro-fuscis, sparsis. Teleutosporis ellipticis, constrictis, læte brunneis (·05 × ·03 mm.), episporio lævi; pedicellis gracilis, hyalinis, elongatis (circa ·08 mm. long).
On *Jurinea.* Beg Dagh.

Melampsori Lini, *Tul. Ann. Sci. Nat.*
On *Linum austriacum.* Luristan.

Melampsora Euphorbiæ, *Tul. Ann. Sci. Nat.*
On *E. falcata.*

Uromyces gypsophilæ, *Cke.*
Hypophylla, vel caulina. Soris orbicularibus, atro-fuscis, magnis. Pseudosporis subglobosis, intense fuscis (·025-·027 mm.). Episporio verruculoso, pedicellis evanidis. Protosporis n. v.
On *Gypsophila.* Kurdistan.

Natal.

Communicated by Mr. J. M. Wood, of Inanda :—

Agaricus (Collybia) dryophilus, *Fr. prox.*
On the ground. (No. 434.)

Trametes funalis, *Fr. Epicr., p.* 459.
On wood. (No. 433.)

Cladoderris Australica, *Berk.*
The pileus of a dark umber brown.
On wood. (No. 239.)

Physarum cinereum, *Batsch.*
On grasses. (No. 429.)

Æcidium aroideum, *Cke.* in *Grevillea.*
On leaves of *Stylochiton.* (No. 114.)

Coleosporium ochraceum, *Fckl.*
On leaves of *Agrimonia.* (No. 432.)

Puccinia hydrocotyles *(Mont.).*
Protosporis (*Uredo hydrocotyles,* M.) immixtis. Teleutosporis ellipticis, leniter constrictis, brunneis (·03 × ·02 mm.). Episporio lævi, pedicellis elongatis.
On *Hydrocotyle.* (No. 450.)

Darluca filum, *Cast.*
On leaves of *Vigna marginata.* (No. 115.)

Meliola bifida, *Cke.*
Epiphylla vel cauligena, atra, effusa, velutina. Conceptaculis globosis. Appendiculis erectis, ad apicem bifidis ; ramulis brevis, acutis. Sporidiis cylindricis, obtusis, quadri-septatis, leniter constrictis, brunneis (·05 × ·012 mm.).
On *Osiridocarpus Natalensis.*

New Zealand.

Communicated by Mr. F. Kirk :—

Polyporus (Anodermei) cinnabarinus, *Fr.*
On wood. (No. 46.)

Polyporus (Placodermei) australis, *Fr.*
On wood. (No. 44.)

Polyporus (Inodermei) tabacinus, *Mont.*
On wood. (Nos. 45, 49.)

Hirneola polytricha, *Mont.*
On wood. (No. 48.)

Lycoperdon cœlatum, *Fr.*
On the ground. (No. 47.)

Lycoperdon gemmatum, *Fr.* var. **papillatum.**
On the ground. (No. 50.)

Guepinia spathularia, *Fr.*
On wood. (No. 52.)

Hysterium sinuosum, *Cke.*
Gregarium, flexuosum, opacum, striatum, utrinque obtusum ; labiis conniventibus (½-2 mm. long). Ascis clavatis. Sporidiis ellipticis, medio constrictis, hyalinis, multiseptatis, muriformibus (·02-·03 × ·01-·015 mm.).
On bleached wood. (No. 54.)
External appearance quite distinct from any other species with muriform sporidia.

Sphærostilbe nigrescens, *Kalch. & Cke. Fungi Capensis, ined.*
Perithecia cæspitosa, erumpens, coccineo-rubra, demum nigrescens, globoso-depressa. Ascis clavato-cylindricis. Sporidiis ellipticis, multiseptatis, merenchymatis, hyalinis (·03-·04 × ·012-·015 mm.). Conidiis stilboideis, clavatis, vel subrotundis, pallidis ; stipite obscuriore ; sporis ellipsoideis, hyalinis (·006 × ·003 mm.).
On bark. (No. 53.)
Sporidia resembling those of *Sph. pseudotrichia,* Schw., but perithecia cæspitose, and turning blackish.

Hypoxylon exutans, *Cke.* in *Grevillea.*
On bark of trees. (No. 51.)

Diatrype glomeraria, *Berk.*
On branches. (No. 56.)

NEW COSMARIUM IN TRAFALGAR SQUARE.

We have been somewhat surprised to learn that Dr. Wittrock has found a new species of *Cosmarium* in the fountains of Trafalgar Square (London), which he calls *Cosmarium trafalgaricum*. New organisms turn up in the most unexpected manner, and, although this was found as far back as 1872, many of us are now hearing of the fact for the first time. Specimens are published in Wittrock's Exsiccati, it is presumed, although not detected in the copy we have seen, under No. 81. It has been thus described :—

Cosmarium trafalgaricum. *Wittr.*

Parvum, quinta fere parte longius quam latus, in medio profunde constrictum, sinu lineari extrorsum ampliato, membrana glabra ; semicellulis a fronte visis reniformibus, latere dorsali in medio leviter emarginato, a latere visis orbicularibus, in utroque latere tuberculo minimo mediano ornatis, a vertice visis ellipticis, lateribus tuberculo minimo mediano ornatis. Long. cell 24-26 m., lat. 20-21 m., crass 13-14 m. lat. isthmi 6-7 m.

In the fountains, Trafalgar Square, London. Allied to *C. Phaseolus*, Breb., and may be compared with *C. Bicardia*, Reinsch.

Braithwaite's British Moss Flora.—The attention of Bryologists is specially directed to the announcement, which accompanied the last number of "Grevillea," of the commencement of a series of monographs by Dr. R. Braithwaite, F.L.S., of the families of British mosses. These monographs will each be complete in itself, illustrated by plates of all the species, with microscopical details of their structure. The work commenced with the Andreæaceæ, which is ready for delivery. Subscribers for the first section will receive twelve plates illustrating the Andreæaceæ (2), Buxbaumiaceæ (1), Georgiaceæ (1), Polytrichaceæ (5), and Fissidentaceæ (3). The subscription for this, and similar sections, will be half-a-guinea. It is unnecessary to add that this work will be thoroughly abreast of the time, and that Dr. Braithwaite may be relied upon to do his duty completely and satisfactorily.

The above paragraph was written for insertion in our last number, but pressed out for lack of space. Since then we have seen the two parts already issued, and find them fully equal to our expectations. No Bryologist in this country, or indeed in the United States, can do without a copy of this Moss Flora, which, being privately printed, we would recommend them strongly to procure without delay. It may be had direct, on application to the author, No. 303, Clapham Road, London.

SOUTH AFRICAN FUNGI.

By C. Kalchbrenner *and* M. C. Cooke.

The majority of specimens from which the following species have been described were collected by Professor McOwan at Somerset East, and communicated to Herr C. Kalchbrenner. A few were obtained in Natal by Mr. J. M. Wood, of Inanda. They have been determined for some months, but publication has unfortunately been delayed.

Agaricus (Lepiota) pteropus, *Kalch. & McOw.*

Facies *Ag. Friesii*, Lasch, sed procerus, stipite ebulbi, omnino solido, annulo fixo, lamellis sub adnatis. Odor fortissimus, raphanoideus, cum odore liquaminis fungorum (" Ketchup ") pro condimento præparato sed omnino ingratus.

On the ground. No. 392.

Agaricus (Lepiota) rubricatus, *Berk. & Br., Ceylon Fungi, p.* 497, *prox.*

On the ground. Nos. 103, 394.

Agaricus (Pleurotus) septicus, *Fr.*

On wood. No. 191.

Agaricus (Pleurotus) aureo-tomentosus, *Kalch.*

Pileus carnosus, vix excentricus, e hemispherico-convexus, obtusus, exstrius, cum stipite farcto subæquali aureo-tomentosus ; tomentum in disco pilei areolatum, quasi verruculosum. Lamellæ adnato-decurrentes, sub-distantes, cum carne stipitis et pilei albolutescentes.

On wood. No. 416.

Agaricus (Psilocybe) tædiosus, *Kalch.*

Pileus carnosus, e convexo-planus, obtusus vel vertice depressus (1-2 poll. latus) stipes gracilis, cavus (4-5 unc. longus, 1-2 lin. crassus). Lamellæ adnatæ ventricosæ, sub confertæ, fuligineæ. Sporæ ovatæ (·012 × ·009 mm.).

On the ground. No. 393.

Pileus brown, stem paler; flesh of the pileus 2-2½‴ thick.

Coprinus punctatus, *Kalchb.*

Pileus tenuiter carnosus, cylindrico-campanulatus (2-2½ unc. altus, 1-1½ unc. latus) vertice squamulosus, impressus, margine striatus, epidermide firmula, squamules nigricantibus subtilissime punctata et passim vage rimosa, fuscescens. Stipes solidus, gracilis, fere spithamaceus (medio 2-3‴ crassus), utrinque fusiformi-attenuatus et ipsa basi ovato-bulbosus, fibrillosus, pallidus. Lamellæ liberæ, postice attenuatæ, nigræ. Sporæ ovales ·0015 × ·001 mm. nigræ.

On the ground. No. 413.

Xerotus caffrorum, *Kalchb. Fungi Capensis ined.*

No. 341.

Xerotus nigrita, *Lev.* (*Panus melanophyllus, Fr. Fungi, Natal*).
On wood. No. 189.

Lentinus Zeyheri, *Berk. Hook. Journ., II.* 507.
On wood. No. 97.

Lentinus strigosus, *Fr.*
On wood. No. 421.

Cyphella farinacea, *Kalch. & Cke.*
Subgregaria, aquose-grisea. Cupulis (1-2 mm.) expansis, demum explanatis, extus albo-farinaceis, margine sub-recurvo; contextu tenue, diaphano.
On naked wood. No. 1221.

Cyphella punctiformis, *Fr. var.* **strigosa.**
Pilis elongatis, granulatis.
On dead leaves. No. 489.

Tremella micropera, *Kalch. & Cke.*
Erumpens, sicco hysteriiformis, udo gilva, convexa. Sporophoris ovatis. Sporis elongato-ellipticis quandoque curvulis, triseptatis, hyalinis (·02 × ·01 mm.).
On branches. No. 1351.
Breaking through the bark in a similar manner to *Colpoma quercinum*, Wallr.

Hypsilophora callorioides, *Kalch & Cke.*
Rosea, gelatinosa, pulvinata, erumpens (1 cm. long). Hyphis simplicibus vel furcatis, concatenato-cellulosis; cellulis oblongis, utrinque truncatis, hyalinis, uni-nucleatis.
On dead wood. No. 73.
With the habit of *Dacrymyces*, but separated from that genus by Berkeley, in common with two or three North American species, on account of the moniliform threads.

Phoma stapeliæ, *Kalch. & Cke.*
Sparsa, epidermide nigrifacto tecta. Peritheciis globoso-depressis. Sporis arcte ellipticis, hyalinis, binucleatis (·01-·012 × ·003 mm.).
On stems of *Stapelia moschata.* Nos. 476, 1395.

Phoma artemisiæ, *Kalch. & Cke.*
Sparsa, tecta, hysteriiformis, atra, Peritheciis applanatis, sporis subfusiformibus, hyalinis, binucleatis (·015-·018 × ·004 mm.). Sporophoris tenuibus, elongatis, superne curvulis.
On stems of *Artemisia.* No. 1399.

Phoma tatulæ, *Kalch & Cke.*
Sparsa, minima. Peritheciis membranaceis, punctiformibus, fuscis. Sporis ellipticis, hyalinis (·0065 × ·004 mm.).
On stems of *Datura tatula.* No. 1407.

Macroplodia corticale, *Kalch & Cke.*
Sub superficiale, gregarium. Peritheciis subglobosis, atris, vix papillatis. Sporis ovato-globosis, fuscis (·0075 × ·004 mm.).
On bark. Nos. 138, 522.
Resembling a small *Sphæria* of the section *Denudatæ*, but without asci.

Diplodia cassinopsidis, *Kalch. & Cke.*

Sparsa, epidermide nigrifacto tecta, nitida, centro pertusa. Peritheciis subconicis, sporis ellipticis, uniseptatis, nec constrictis, fuscis (·022 × ·01 mm.).

On *Cassinopsis Capensis.* No. 1264.

It has the habit and appearance of a species of *Pemphidium*, but with the fruit of a *Diplodia*.

Diplodia clematidis, *Kalch. & Cke.*

Sparsa, erumpens, epidermide cincta. Peritheciis obtusis, atris, opacis. Sporis ellipticis, uniseptatis, nec constrictis, fuscis (·012-·014 × ·005 mm.).

On twigs of *Clematis brachiata.* No. 1358.

Vermicularia dianthi, *Westdp.*

On leaves of *Dianthus.* No. 1435.

Ceuthospora oleæ, *Kalch. & Cke.*

Epiphylla. Maculis orbicularibus, fuscis. Peritheciis depressis, fissurato-dehiscentibus. Sporis cylindricis, utrinque obtusis, hyalinis, (·03 × ·0035 mm.).

On leaves of *Olea Capensis.* No. 1333.

PROTOSTEGIA, *Cke.*

Primo tecta, dein denudato, discoidea, margine lacerato, dentato, fimbriatove. Disco gelatinoso. Sporis elongatis, simplicibus, vel septatis, pedicellatis, dein liberis.

This genus was constituted for the reception of the species long known as *Stegia Magnoliæ* Rav. from the United States. It may possibly be a stylosporous condition of *Stegia*, but no asci have yet been discovered.

Protostegia eucleæ, *Kalch. & Cke.*

Epiphylla. Receptaculis immersis, discoideis, fuscis margine dentato; disco aquose cinereo, convexo; sporophoris parce ramosis; sporis linearibus, rectis, vel curvulis multinucleatis, demum 3-5 septatis (·04-·05 × ·003 mm.).

On leaves of *Euclea undulata.* No. 1340.

ONCOSPORA, *Kalch.*

Receptaculum erumpens, cupulæformis vel discoidea, plerumque gregaria, vel stromatis tympanoideis enata; hymenio nudo, gelatinoso; sporis hyalinis, continuis, flexuosis in, hyphis tenuissimis apicalibus gerentibus.

Differs from *Protostegia* in its similarity to *Tympanis* rather than to *Stegia*, and in the different character of the spores. The cups are substipitate and emergent, often cæspitose.

Oncospora bullata, *Kalch. & Cke.*

Maculæ bullatæ, nigræ. Receptaculis gregariis, discoideis, atris, margine elevato; hymenio fusco. Sporis subclavatis, hamatis, vel sigmoideis, simplicibus (·03 × ·007 mm.).

On leaves of *Capparis citrifolia.* No. 23.

Resembling a cluster of the cups of *Peziza Dehnii*, collected on a dark bullate spot. Spores of a peculiar form, often sigmoid, or resembling a note of interrogation (?).

Oncospora viridans, *Kalch. & Cke.*
Epiphylla, cæspitosa, erumpens. Receptaculis atris, substipitatis, in stromate pulvinato congestis ; disco cinereo ; sporis cylindricis, vel subclavatis, rectis, vel curvulis (·02 × ·0035 mm.) hyalinis; sporophoris in gelatinâ viridi immersis.
On leaves of *Capparis Guienzii.* No. 1273 *bis.*

Sacidium gomphocarpi, *Kalch. & Cke.*
Maculis, suborbicularibus, fuscis. Peritheciis gregariis, minimis, applanatis, membranaceis, fuscis. Sporis subglobosis, achrois (·004 mm.).
On leaves of *Gomphocarpus fruticosus.* No. 1434.

Septoria umbelliferarum, *Kalch.*
Maculis suborbicularibus, fuscis. Peritheciis in centro suffultis, punctiformibus; sporis linearibus, rectis vel flexuosis, hyalinis (.035-·05 mm. long).
On leaves of *Umbelliferæ.* No. 1393.

Septoria nesodes, *Kalch.*
Epiphylla. Maculis irregularibus, fuscis. Peritheciis immersis, membranaceis. Sporis cylindricis, obtusis, multinucleatis, rectis vel curvulis (·02-·025 mm. long).
On leaves of *Hydrocotyle Asiatica.* No. 1115.

Septoria buddleiæ, *Kalch. & Cke.*
Epiphylla. Maculis irregularibus, fuscis, hinc illic confluentibus. Peritheciis membranaceis, semi-immersis. Sporis linearibus, rectis vel flexuosis, hyalinis (·04-·05 mm. long).
On leaves of *Buddleia salviæfolia.* No. 1251c.

Phyllosticta aloes, *Kalch.*
Epiphylla. Maculis ellipticis, aurantio-fuscis. Peritheciis membranaceis, gregariis, fuscis, immersis. Sporis ellipticis, profusis, hyalinis (·005 mm. long).
On *Aloe latifolia.* No. 1023.

Phyllosticta auriculata, *Kalchb. & Cke.*
Epiphylla. Maculis orbicularibus, pallidis, purpureo-cinctis. Peritheciis punctiformibus, immersis, poro pertusis ; sporis ellipticis, continuis, hyalinis (·005 mm. long).
On leaves of *Buddleia auriculata.*

Phyllosticta carissæ, *Kalch. & Cke.*
Epiphylla. Maculis suborbicularibus, pallide fuscis, brunneo-cinctis. Peritheciis punctiformibus, papillatis immersis. Sporis arcte ellipticis, hyalinis (·006 mm. long).
On leaves of *Carissa Arduina.* No. 1355.

Phyllosticta rhuina, *Kalch. & Cke.*
Epiphylla. Maculis elongatis, fuscis. Peritheciis punctiformibus, atro-fuscis, dense congestis. Sporis arcte ellipticis, hyalinis (·005 × ·002 mm).
On leaves of *Rhus lævigata.* No. 1406.
The perithecia are minute and densely crowded on the irregular brown spots.

Æcidium withaniæ, *Thumen.*
On leaves of *Withania somnifera.* No. 1138.

Æcidium stobeæ, *Kalch. & Cke. in Grevillea* VIII, *p.* 70.
On leaves of *Stobœa.* Natal, No. 63.

Æcidium aroideum, *Cke. in Grevillea* VIII, *p.* 71.
On leaves of *Stylochiton Natalensis.* Natal, 114.

Æcidium crypticum, *Kalch. & Cke.*
Hypophylla. Peridiis paucis (5-6) in circulo gerentibus, inter tomento nidulantibus. Sporis subglobosis, lævibus, aurantiacis (·012-·014 mm. diam.).
On leaves of *Gerbera.* Natal, 66.

Æcidium vignæ, *Cke. in Grevillea* VIII, *p.* 71.
On leaves of *Vigna marginata.* Natal, 407.

Uredo macrospermum, *Cke. in Grevillea* VIII, *p.* 71.
On fronds of ferns. Natal, 61.

Trichobasis zehneriæ, *Thum.*
On leaves of *Zehneria scabra.* 1271.

Uredo clematidis, *Berk.*
On *Clematis brachiata.* No. 1141.

Coleosporum hedyotidis, *Kalch. & Cke.*
Epiphyllum, sparsum, aurantiacum. Soris elongatis vel confluentibus. Sporis concatenatis, ellipticis, utrinque truncatis (·02-·03 × ·016 mm.) episporio granuloso.
On leaves of *Hedyotis Amatymbica.* Natal, 60.

Puccinia helichrysi, *Kalch. & Cke.*
Protosporis. *Uredo Lepisclinis,* Thum. Teleutosporis lanceolatis, uniseptatis, constrictis, atro-fuscis (·04-·055 × ·015-·018 mm.) episporio lævi. Pedicellis evanidis.
On leaves of *Helichrysum petiolatum.* No. 35.

Puccinia ornithogali, *Kalch.*
Sparsa. Soris ellipticis, tectis, demum elongato-fissuratis, fuscis. Protosporis ellipticis, lævibus, pallidis (·02-·022 × ·018 mm.). Teleutosporis ellipticis, uniseptatis, constrictis, fuscis; episporio lævi; pedicellis sporis æquilongis.
On *Ornithogalum.* Nos. 1140, 1190.

Puccinia Africana, *Cke. in Grevillea* VIII, *p.* 74.
On *Spilanthes Africana.* Natal, 200.

Puccinia galiorum, *Link.*
On *Rubia petiolaris.* No. 1151.

Puccinia printziæ, *Thum.*
On leaves of *Printzia Huttoni.* 1278.

Uromyces pulvinatum, *Kalch & Cke.*
Epiphyllum. Soris discoideis pulvinatis, sclerotioideis, atro-brunneis, compactis. Sporis subglobosis (·018-·02 mm.) fuscis, lævibus.
On leaves of *Euphorbia inæquilatera.* No. 1247.
The spores spring from a discoid stroma, or cushion, almost as in *Coryneum.*

Uromyces circinalis, *Kalch. & Cke. in Grevillea* VIII, *p.* 71.
On leaves of some *monocotyledon.* No. 1417.

Melampsora hyperici, *Schrot.*
On *Hypericum æthiopicum.* No. 1392.

Ravenelia glabra, *Kalch. & Cke. in Journ. Roy. Micr. Soc.,* 1880, *iii, p.* 384.
Sparsa. Capitulis magnis (·15 mm. diam.) convexis, subsessilibus, cellulis (·02 mm.) lævibus, læte brunneis.
On leaves of *Acacia horrida*, No. 1436, and *Colpurnia sylvatica.*

Protomyces physalidis, *Kalch. & Cke.*
Cellulis in maculis obscurioribus immersis. Sporis globosis, pallidis, lævibus (·01-·02 mm. diam.).
On leaves of *Physalis Hornemanni.* No. 1121.

Cystopus quadratus, *Kalch. & Cke.*
Epiphyllus. Soris albis, minimis, convexis. Sporis quadratis (·025 lat., ·018 long). Sporâ ultimâ subglobosâ. Oogoniis, n. v.
On *Herpestes verticillaris.* No. 1314.
Evidently allied to *C. cubicus,* but the discovery of the oogonia will doubtless prove it to be distinct.

Hemileia Woodii, *Kalch. & Cke.*
Hypophylla. Pulvinulis parvis, aurantiacis, gregariis; sporangiis globosis, vel uno latere compressis, asperulis (·03 mm.) longe stipitatis, cum cystidis hyalinis, triquetris, sterilibus, lævibus, immixtis.
On leaves unknown. Natal, No. 28.

Ceratium sphæroideum, *Kalch. & Cke.*
Pulvinulis convexis, hemisphericis, carneo-rubris; sporis globosis, lævibus (·01 mm. diam.) cum hyphis continuis, hyalinis immixtis.
On *Andropogon marginatum.* No. 1284.

Isaria coralloidea, *Kalch. & Cke.*
Cæspitosa, ramulosa, coralloidea, pallida cervina, apice dilata, penicillata; filis clavatis; sporis minutissimis, globosis.
On rotten wood. No. 69.
A very singular species, growing in small fawn-coloured tufts.

Stilbum cineripes, *Kalch. & Cke.*
Sparsum. Capitulis globosis, cervinis ($\frac{1}{2}$ mm. diam.). Sporis ellipticis, hyalinis, binucleatis (·006-·007 × ·0035 mm.) stipite inferne leniter incrassato, sulcato, torto, cinereo (2-3 mm. long).
On bark. No. 214.

Stilbum connatum, *Kalch. & Cke.*
Cæspitosum. Capitulis subglobosis, flavido-carneis ($\frac{1}{8}$-$\frac{1}{6}$ mm. diam.); sporis minutis, linearibus (circa ·005 mm. long). Stipitibus erectis, in stromate irregulare, concolore connatis.
On wood. No. 196.

POLYCEPHALUM, *Kalch. & Cke.*
Stipes solidus, stilboideus terminatus, capitulo composito, gelatinoso, involvente sporæ. Capitulis numerosis, globosis, elongatis—ve deciduis.

The structure is that of a compound *Stilbum*, each stem surmounted by a cluster of capituli which terminate short branches, and are composed entirely of minute gelatinous spores.

Polycephalum aurantiacum, *Kalch. & Cke.*

Totum aurantiacum. Stipite crasso, cylindrico, superne in ramulis brevibus diviso. Capitulis ellipticis, deciduis. Sporis hyalinis (·0025 × ·0015 mm.).

On rotten wood. No. 1353.

The ramuli are scarcely more than papillæ, each of which bears a capitulum.

Fusarium aloes, *Kalch & Cke.*

Sparsum, carneum, gelatinosum. Hyphis brevibus. Sporis fusiformibus, continuis, rectis vel lunatis, utrinque acuminatis, hyalinis, (·04-·05 × ·0035-·004 mm.).

On *Aloe arborescens.* No. 1473.

Microstroma quercinum, *Niessl.*

On oak leaves.

Ramularia richardiæ, *Kalch.*

Effusa, farinosa, albida. Hyphis simplicibus vel furcatis, erectis. Sporis elongato-ellipticis vel subclavatis, hyalinis (·05 × ·015 mm.).

On leaves of *Richardia albomaculata.* Nos. 1116, 493.

Ramularia rumicis, *Kalch. & Cke.*

Maculis fuscis, ellipticis, magnis. Hyphis subsimplicibus, erectis, fasciculatis. Sporis cylindricis, utrinque rotundatus (·022-·03 × ·005 mm.).

On leaves of *Rumex obtusifolius.* No. 1180.

Distinct from *Peronospora obliqua*, Cke., which is technically also a *Ramularia.*

Oidium erysiphoides, *Fr.*

On leaves of *Verbena.* No. 493.

Mystrosporium polytrichum, *Cke. in Ravenel's N. Amer. Fungi.* (*Mystrosporium velutinum, K. & C.*)

Atrum, velutinum, effusum. Hyphis fasciculatis, erectis, simplicibus. Sporis clavatis, multicellulosis (·04-·045 × ·018 mm.) fuscis.

On aloe. No. 500.

Apparently not distinct from the common North American species.

Mystrosporium aterrimum, *B. & C.*

On *Celastrus buxifolius.* No. 1282.

Macrosporium punctatum, *Kalch. & Cke.*

Effusum, griseum; cæspitulis sparsis, punctiformibus. Hyphis fasciculatis, erectis, simplicibus. Sporis clavatis, 3-5 septatis, fuligineis, hinc illic cellulâ unicâ longitudinaliter divisâ (·035-·06 × ·01-·015 mm.).

On *Allium schœnoprasum.* No. R. 21.

Epochnium phyllogenum, *Kalch & Cke.*

Effusum, epiphyllum. Hyphis repentibus, hyalinis, ramosis; ramulis assurgentibus, rectis; sporis terminalibus, globoso-ovatis, cellulosis, fuligineis (·025 × ·02 mm.).

On living leaves. Natal, No. 39.

Menispora cylindrica, *Kalch. & Cke.*

Phyllogena, effusa, atrofusca. Hyphis tenuibus, simplicibus, erectis, flexuosis, mycelio ramoso fusco assurgentibus. Sporis cylindricis, utrinque obtusis, hyalinis, continuis (·016 × ·0025 mm.).

On leaves of *Myrsine melanopleos.* No. 1352.

Fusicladium fuliginosum, *Kalch. & Cke.*

Effusum, fuliginosum, incrustatum. Hyphis repentibus, ramosis. Ramulis assurgentibus, brevibus, quandoque furcatis. Sporis fusoideis, continuis, hyalinis (·01-·012 × ·004 mm.).

On living leaves. Natal. No. 9.

Forming large sooty patches on the green, but fading leaves.

Cladosporium laxum, *Kalch. & Cke.*

Phyllogenum, maculæforme. Cæspitulis brunneis. Hyphis flexuosis, laxis, repentibus, ramosis, sparse septatis, fuscis. Sporis cylindrico-fusoidis, 1-3 septatis (·015-·03 × ·004 mm.).

On fading leaves of *Printzia pyrifolia.* No. 1394.

Forming little brown tufts on the fading leaves.

Cercospora hæmanthi, *Kalch.*

Maculæ ellipticæ, magnæ, pallidæ, rubro-marginatæ. Cæspitulis sparsis. Hyphis fasciculatis, flexuosis, simplicibus, sporis cylindricis, curvulis vel flexuosis, nucleatis dein 3-5 septatis (1· × ·004 mm.).

On *Hæmanthus puniceus.* No. 1020.

Cercospora commelynæ, *Kalch. & Cke.*

Maculæ orbiculares, fuliginosæ. Hyphis brevissimis, simplicibus, hyalinis. Sporis tenuibus, linearibus, flexuosis indistincte septatis (·05-·07 mm. long).

On living leaves of *Commelyna Bengalensis.* No. 1346.

Cercospora leonitidis, *Cke. in Grevillea* VIII., *p.* 72.

On leaves of *Leonitis ovata.* Natal. No. 5.

Cercospora delicatissima, *Kalch. & Cke.*

Maculæ orbiculares, fuliginosæ. Hyphis tenuibus, repentibus, sub-fasciculatis. Sporis linearibus, rectis vel curvulis, nucleatis (·065-·085 mm.).

On living leaves of *Priva dentata.* No. 1109.

Cercospora cluytiæ, *Kalch. & Cke.*

Maculæ irregulares, fuscæ. Hyphis brevibus, dense fasciculatis, hyalinis. Sporis ob-clavatis, curvulis, 3-5 septatis, apice acuto (·03-·07 × ·0035-·004 mm.).

On fading leaves of *Cluytia pulchella.* No. 1352.

Exosporium celastri, *Kalch.*

Cæspitulis sparsis, subcircinatis, atris, erumpens. Hyphis dense fasciculatis, olivaceo-fuscis. Sporis sublanceolatis (·02-·025 × ·005 mm.).

On leaves of *Celastrus buxifolius.* No. 1396.

Physospora rubiginosa, *Fr.*

On rubbish, broken twigs, &c. No. 1387.

Probably this species, of which we have seen no authentic specimen.

Hydrophora stercoraria, *Tode.*
On dung. Nos. 487, 1299.

Peziza (Mollisia) subgilva, *Kalch. & Cke.*
Sparsa, sessilis, ceraceo-mollis. Cupulis totius subgilvis ¾-1½ mm. diam.) concavis; margine rotundato, subtumido; ascis cylindraceis. Sporidiis ellipticis, hyalinis (·008 × ·004 mm.). Paraphysibus filiformibus.
On rotten wood. R. 22a.

Helotium capensis, *Kalch. & Cke.*
Sparsum, aurantiacum. Cupulis stipitatis, explanatis (3 mm. diam.). Stipite deorsum attenuato, pallidiore (2½ mm. long.) in cupulâ expanso, ascis clavatis. Sporidiis fusiformibus, curvulis, 5 septatis (·05 × ·006 mm.).
On sticks.

Helotium ferrugineum, *Fr.*
On twigs. Nos. 22, 1126.

Phillipsia kermesina, *Kalch. & Cke.*
Sparsa, substipitata, firma. Cupulis (1 cm.), concavis, purpureo-rubris, extus lævi, pallido, deorsum attenuato; ascis cylindraceis. Sporidiis ellipticis, binucleatis, dein spurie uniseptatis (·019-·023 × ·011 mm.). Paraphysibus linearibus, multinucleatis.
On chips.
Substance much firmer than in *Peziza*, not shrinking or collapsing in drying. The genus was established by Rev. M. J. Berkeley for five or six species formerly included in *Pezizia*.

Dermatea pelidna, *Kalch. & Cke.*
Cæspitosa, erumpens. Cupulis concavis, contortis (3 mm. diam.), subsessilibus, extus rufis, furfuraceis. Disco atro-fuligineo. Ascis cylindraceis. Sporidiis linearibus (·004 mm. long).
On decorticated branches. No. 16.
Allied to *D. furfuracea* and *D. fascicularis*. Exterior covered with short granular hairs.

Dermatea rufa, *Cke. in Grevillea* VIII, *p.* 72.
On bark. Natal, No. 400.

Stictis thelotremoides, *Phil.*
Sparsa, immersa, orbicularis (⅓-½ mm. diam.). Disco melleo, excavato. Margine prominente, subintegro, albo. Ascis cylindraceis. Sporidiis filiformibus (·15 mm. long). Paraphysibus filiformibus.
On branches. No. 76.

Stictis bella, *Kalch. & Cke.*
Immersa, orbicularis (·1 mm. diam.), margine niveo, expanso, lobato-fissurato; disco aureo, excavato. Ascis cylindraceis. Sporidiis filiformibus (·3 mm. long). Paraphysibus filiformibus, subflexuosis.
On branches. No. 1288a.
The cups break through elongated fissures of the bark, and have somewhat the appearance of miniature daisies. A very elegant species.

Stictis radiata, *Fr.*
On branches. Nos. 1288, 1040.
Sporidia ·18-·2 mm. long.

Phacidium litigiosum, *Desm.*
On leaves of *Ranunculus pinnatus.* No. 1281.

Triblidium rufulum, *Spr.*
On branches. No. 1339.

Hypocrea lycogalæ, *Kalch. & Cke. in Grevillea* VIII., *p.* 72.
On rotten wood. No. 1357.

Hypocrea sulfurella, *Kalch. & Cke.*
Discoidea vel confluens, convexa, sulphurea, fusco-punctata. Ostiolis prominulis, demum atro-fusca. Ascis cylindraceis. Sporidiis articulis globosis, fuligineis (·0055 mm.).
On *Eucalyptus* bark. No. 178.
The dark perithecia are very conspicuous in the pale greenish yellow stroma.

Hypocrea subcitrina, *Kalch. & Cke.*
Discoidea, elliptica vel confluens, tenuis, subapplanata, citrina, ostiolis vix prominulis, fuscescentibus. Ascis cylindraceis. Sporidiis ariculis globosis hyalinis (·0045 mm.).
On bark. Nos. 184, 202, 205.
Stroma thinner, and sporidia rather larger than in *H. citrina,* to which it is allied.

Hypocrea chrysostigma, *Kalch. & Cke.*
Discoidea, convexa, aurea fuscescens, intus flava. Peritheciis fuscis. Ostiolis vix prominulis, punctiformibus, fuscis. Ascis cylindraceis. Sporidiis articulis globosis, fuligineis (·0043 mm.).
On bark. No. 1301.

Hypocrea carnea, *Kalch. & Cke.*
Convexa dein applanata, elliptica, vel sublobata, carneo-rosea. Ostiolis vix prominulis, punctiformibus. Ascis cylindraceis. Sporidiis breviter ellipticis, uniseptatis, nec constrictis, hyalinis (·008 × ·006 mm.).
On bark. No. 20.

Sphærostilbe rosea, *Kalch.*
Gregaria, rosea. Conidiophoris stipitatis, stilboideis. Capitulis globosis, turbinatisve (½ mm.). Conidiis ellipticis, hyalinis, (·005 × ·0025 mm.), stipite erecto, rubro (·2 mm.), ad basin incrassato, quandoque confluente. Perithecia n.v.
On *Acacia horrida.* No. 1118.
At present only the *Stilbum* has been observed, but the habit is so much that of *Sphærostilbe* that it is placed here.

Sphærostilbe nigrescens, *Kalch. & Cke. in Grevillea* IX., *p.* 15.
On bark. No. 1039.

Sphærostilbe hypocreoides, *Kalch. & Cke.*
Pallide rosea, convexa. Peritheciis in stromate hypocreoidei connatis. Ostiolis papillatis. Ascis cylindraceis. Sporidiis ellipticis, uniseptatis, hyalinis (·01-·012 × ·007) episporio leniter

granulato. Coniophoris clavatis, paucis, stipite brevo. Conidiis arcte ellipticis (·005 × ·002 mm.).

On bark. No. 36.

A remarkable species. The perithecia are fused into a stroma as in *Hypocrea*. The *Stilbum* grows principally upon the stroma, and the sporidia are slightly rough.

Nectria martialis, *Kalch. & Cke.*

Sparsa, coccinea. Peritheciis subglobosis, minute granulatis, papillatis, demum depressis, dein cupulæformibus. Ascis clavatis. Sporidiis biseriatis, ellipticis, uniseptatis, hyalinis (·015 × ·0065 mm.).

On naked wood. No. 1161.

Perithecia dark blood-red when old. Sporidia apparently constantly biseriate. Distinct from *N. sanguinea* to which it is allied.

Nectria leocarpoides, *Kalch. & Cke.*

Sparsa vel gregaria. Peritheciis obturbinatis, fragilibus, nitentibus, aureo-fulvis. Ostiolo mamillato, castaneo. Ascis cylindricis. Sporidiis uniseriatis, ellipticis, uniseptatis, constrictis (·015 × ·008 mm.).

On *Sarcophyte sanguinea.* No. 5.

Perithecia fragile, reminding one of *Leocarpus fragilis,* shining, with a dark mamillate ostiolum. The perithecia are Indian yellow when the light is transmitted through them under a high power.

Nectria heterosperma, *Kalch. & Cke.*

Cæspitosa, erumpens, livido-rubra. Peritheciis subglobosis, demum depressis, lævibus, in stromate convexo congestis. Ascis cylindraceis. Sporidiis uniseriatis, ovatis, ellipticis, lanceolatisve, uniseptatis, hyalinis (·012-·022 × ·009 mm.).

On dead branches. Nos. 1064, 56.

Sporidia singularly variable in length and form in the same perithecium.

Nectria eximia, *Kalch. & Cke.*

Cæspitosa, læte coccinea. Peritheciis obovatis, exiguis, in stromate convexo congestis; ostiolo prominulo. Ascis cylindraceis. Sporidiis uniseriatis, ellipticis, utrinque attenuatis (·015 × ·006 mm.).

On bark.

The sporidia are scarce mature, so that the very faint indications of a septum are too doubtful to be relied upon. The minute numerous bright coloured perithecia are distinctive features.

Nectria furfuracea, *Kalch. & Cke.*

Cæspitosa, erumpens, carnea. Peritheciis globosis, furfuraceis, in stromate convexo gerentibus. Ostiolo punctiformi, fusco. Ascis cylindraceis, sporidiis uniseriatis, arcte ellipticis, utrinque attenuatis, demum tenuiter uniseptatis (·015-·018 × ·005 mm.).

On bark. No. 186.

Perithecia covered with large mealy granules. Allied to *N. subquaternata,* B., but larger.

Xylaria stilboidea, *Kalch. & Cke.*

Parva, stipitata. Capitulum subglobosum, atrum (1-2 mm. diam.) ostiolis exsertis asperatum. Stipite cylindrico, fusco (1-1½ mm. long) gracili. Stromate albo. Peritheciis atris, immersis. Ascis cylindraceis. Sporidiis uniseriatis, ellipticis, atro-fuscis (·014-·015 × ·005 mm.).

On wood. No. 42.

A very minute species, with the habit and appearance of a species of *Stilbum.*

Hypoxylon placenta, *Kalch.*

Corticola, applanata, atra, erumpens. Stromate discoideo, margine tenui, sterili, centro ostiolis punctiformibus punctato; ascis cylindraceis; sporidiis uniseriatis, ellipticis, atro-fuscis (·012 × ·006 mm.).

On branches. No. 1304.

Closely allied to *H. exutans,* Cke., of which it may possibly be only a variety.

Diatrype caminata, *Kalch. & Cke.*

Erumpens, suborbicularis, convexa, nigrescens; ostiolis exsertis, cylindricis, obtusis, truncatis. Ascis clavatis. Sporidiis linearibus, curvulis, hyalinis (·012 × ·003 mm.).

On branches. No. 1263.

The specimens were old, and in bad condition. The exserted ostiola are abruptly truncate. Probably also the specimen (No. 23), provisionally named *Diatrype congesta,* is only the same species with the ostiola broken off, and all the asci dissolved.

Diatrype capensis, *Kalch. & Cke.*

Erumpens, elliptica, atra, convexa. Peritheciis paucis, magnis; ostiolis pertusis. Ascis clavatis. Sporidiis linearibus, curvulis pallide fuscis (·01 × ·002 mm.).

On branches of *Cassinopsis capensis.* No. 1264.

On *Rubus pinnatus.* 1350.

Valsa infinitissima, *Kalch. & Cke.*

Innata, stromate corticali circumscripto. Peritheciis lageniformibus; ostiolis cylindricis, rectis, sub-elongatis, in stromate fusco exsertis. Ascis clavatis (·025 × ·005 mm.). Sporidiis spermatoideis, curvulis (·004 mm. long).

On branches. No. 1344a.

The asci and sporidia profuse and very minute.

Lasiosphæria capensis, *Kalch. & Cke.*

Atro-fusca. Peritheciis globosis, læviusculis, pilis elongatis mollibus, sparsis, tectis, papillatis, demum depressis, e subiculo strigoso atro-fusco emergentibus. Ascis cylindrico-clavatis. Sporidiis biseriatis, cylindricis, vel elongato-lanceolatis, fuscis, 7 septatis, rectis, vel subflexuosis, leniter constrictis (·08 × ·01 mm.).

On bark. No. 1397.

Ceratostoma cylindrica, *Kalch. & Cke.*

Sparsa. Peritheciis globosis, atris, in cortice immersis. Ostiolo elongato, cylindrico, tenui, flexuoso ; ore fimbriato, erumpente (2 mm. long). Ascis clavatis (·018 × ·008 mm.). Sporidiis spermatoideis, hyalinis, curvulis (·0035-·004 mm. long).

On branches. No. 22, R.

A sterile brown subiculous mould surrounded the specimen, but whether related to the *Sphæria* it is impossible to determine.

Sphæria Africana, *Kalch. & Cke.*

Sparsa, caulicola, erumpens. Peritheciis subglobosis, atris, nitidis, pertusis, semi-emersis. Ascis cylindraceis. Sporidiis uniseriatis, amygdalæformibus, atro-fuscis, opacis (·032-·022 × ·012-·015 mm.).

On herbaceous stems. Nos. 1399, 1400.

Remarkable on account of the sporidia, which resemble those of some species of *Sordaria*, although the perithecia are more like those of a *Pleospora*.

Sphæria intercepta, *Kalch. & Cke.*

Sparsa, cuticulâ cinerascente tecta. Peritheciis subglobosis; ostiolo atro emergente. Ascis clavatis. Sporidiis biseriatis, ellipticis, uniseptatis, fortissime constrictis, loculis subglobosis, hyalinis (·022-·025 × ·012 mm.).

On stems of *Senecio longifolius*. No. 1398.

Sphæria metuloidea, *Kalch. & Cke.*

Sparsa, epidermide nigrefacto tecta. Peritheciis globoso-depressis, atris. Ascis clavatis. Sporidiis biseriatis, lanceolatis, triseptatis, nucleatis, hyalinis (·028-·03 × ·01 mm.).

On stems of *Artemisia*. No. 1399a.

The lanceolate sporidia are not at first constricted, and for some time without septa, with two large central nuclei, and a smaller one at each end.

Sphæria cervispora, *Kalch. & Cke.*

Sparsa, epidermide elevato demum fissurans. Peritheciis atris, subglobosis. Ascis saccato-clavatis. Sporidiis fusiformibus, rectis vel curvulis, 7 septatis, leniter constrictis, flavidis (·05 × ·008 mm.).

On stems of *Artemisia*. No. 1399d.

Two or three distinct species of *Sphæria* are much intermixed on the same stems of *Artemisia*. Their great and manifest differences prevent any assumption that they are at all related to each other.

Sphæria Owaniæ, *Kalch & Cke.*

Sparsa, epidermide elevato demum fissurans. Peritheciis atris, tectis, hinc illic lineâ brevi dispositis. Ascis clavatis. Sporidiis sublanceolatis, rectis, 5 septatis, medio contrictis, parte superiore latiori breviori, flavidis (·04-·042 × ·012 mm.).

On stems of *Artemisia*.

The sporidia differ from those of *S. cercispora* in being straight, broader, divided by a contriction into two unequal parts, of which the upper is broader and shorter than the lower, and there are but five septa.

Sphæria brachiata, *Kalch. & Cke.*
Sparsa, minuta. Peritheciis numerosis, tectis, punctiformibus, submembranaceis. Ascis clavatis; sporidiis biseriatis, lanceolatis, hyalinis, demum leniter 1-3 septatis (·015-·018 × ·004 mm.).
On twigs of *Clematis brachiata.* 1358.
On stems of *Senecio quinquelobus* (McOwan).
The septa are so delicate as to be distinguished with difficulty. The perithecia are minute, resembling some species of *Phoma.* It would perhaps have been better included in *Sphærella.*

Sphæria cumana, *Sacc. & Speg., Fungi Italici, No.* 327.
On leaves of *Carex pendula.* No. 1353.

Sphæria nigro-annulata, *Berk. & Curt.*
Sporidiis fuscis, continuis (·018 × ·007 mm).
On leaves of *Aloe lineata.* No. 1312.

Sphæria caffra, *Kalch. & Cke.*
(*Leptosphæria caffra,* Thum. *Piggotia filicina,* Thum.)
On *Marattia salicifolia.* No. 655.

Sphæria (Pleospora) lanceolata *Kalch. & Cke.*
Sparsa, subtecta. Peritheciis mediis, globosis, papillatis. Ascis clavatis. Sporidiis lanceolatis, 5-7 septatis, cellulis plurimis merenchymato-divisis, flavidis (·035-·04 × ·01 mm.).
On stems of *Artemisia.* No. 1399c.
Sporidia much more uniformly lanceolate than usual in *Pleospora.* One of the central cells often largest and undivided.

Sphæria (Pleospora) refracta, *Kalch. & Cke.*
Sparsa, subtecta. Peritheciis globosis, vix prominulis, cum aliis immixtis. Ascis clavatis. Sporidiis biseriatis, ellipticis, triseptatis, cellulo uno alterove longitudinaliter diviso, hyalinis, refractis, dein brunneis (·025-·028 × ·015 mm.).
On stems of *Artemisia.* No. 1399 *bis.*

Sphærella myrsines, *Kalch. & Cke.*
Hypophylla, sparsa. Peritheciis membranaceis, brunneis, poro pertusis (·1-·15 mm. diam.), applanatis. Ascis arcte clavatis. Sporidiis lanceolatis, demum uniseptatis, hyalinis, nec centro constrictis (·014 × ·003 mm.).
On fading leaves of *Myrsine Africana.* No. 1318.

Sphærella geicola, *Kalch. & Cke.*
Hypophylla. Maculis suborbicularibus, fuscis, purpureo-cinctis. Peritheciis semi-immersis, numerosis, atro-fuscis. Ascis clavatis. Sporidiis breviter lanceolatis, binucleatis, dein uniseptatis, hyalinis, vix constrictis (·016 ·017 × ·0035 mm.).
On leaves of *Geum capensis.* No. 1148.

Sphærella agapanthi, *Kalch. & Cke.*

Maculæ magnæ, irregulares, nigrescentes. Peritheciis numerosissimis, membranaceis, applanatis, fuscis; mycelio fusco, radiato, circumdatis. Ascis obclavatis. Sporidiis ellipticis, utrinque rotundatis, uniseptatis, hyalinis (·015-·018 × ·003 mm.).

On *Agapanthus.* No. 1342.

Sphærella cassinopsis, *Kalch. & Cke.*

Epiphylla. Maculæ pallidæ, purpureo-cinctæ, orbiculares. Peritheciis atris, centro gregariis, minimis. Ascis clavatis (·025 × ·005 mm.). Sporidiis linearibus, rectis, hyalinis (·006 mm. long).

On living leaves of *Cassinopsis capensis.* No. 1341.

The sporidia probably scarce mature, as no septa could be distinguished.

Venturia cephalariæ, *Kalch. & Cke.*

Phyllogena. Maculæ fuscæ, orbiculares. Peritheciis globosis, emergentibus, pilis rigidis, erectis, brevibus, fuscis ornatis. Ascis aliis cylindraceis, aliis clavatis. Sporidiis uniseriatis, vel biseriatis, ellipticis, irregulariter uniseptatis, pallidis (·02-·023 × ·009-·01 mm.) Cellulâ superiore magnâ, cellulâ inferiore minutâ, apiculæformi.

On leaves of *Cephalaria attenuata.* No. 1338.

Melogramma eucalypti, *Kalch. & Cke.*

Argillacea, elevata. Stromate convexo, irregulari, confluente. Pseudo-peritheciis in contextu excavatis. Ascis cylindraceis. Sporidiis uniseriatis, ellipticis, medio constrictis, uniseptatis, fuscis (·015-·018 × ·008 mm.), cellulis subglobosis.

On bark of *Eucalyptus globulus.* No. 1179.

Dothidea oleafoliæ, *Kalch. & Cke*

Atra, nitida, subdiscoidea, convexa, 1-3 cellulata, sparso vel gregaria. Ascis clavatis. Sporidiis 4-8, ellipticis, uniseptatis, constrictis, atro-fuscis (·035 × ·012 mm.).

On leaves of *Olea capensis.* No. 7.

Dothidea arduinæ, *Kalch. & Cke.*

Epiphylla, atra, nitida, rugosa, obtuse subconica, 2-4 cellulosa, sparsa. Ascis clavatis. Sporidiis ellipticis, medio constrictis, uniseptatis, fuscis (·028-·03 × ·012 mm.). Stylosporis in peritheciis minimis ovatis (·006 × ·0045 mm.).

On leaves of *Carissa arduina.* No. 1354.

Upper cell of the sporidia usually larger than the lower.

Dothidea kniphofia, *Kalch. & Cke.*

Maculæ nigrafactæ, ellipticæ. Pseudo-peritheciis gregariius, convexis, atris, subnitidis. Ascis clavatis. Sporidiis elongato-ellipticis, primo nucleatis, continuis hyalinis (·018-·02 × ·005-·006 mm.).

On stems and leaves of *Kniphofia aloides.* Nos. 1011, 1337 b.

Dothidea repens, *Corda.*

On living leaves. Natal. No. 228.

Dothidea vorax, *B. & C.*, forma **minor.**

On *Oplismenus africanus.* No. 1326.

Dothidea circinata, *Kalch. & Cke.*

Amphigena, inæqualis, minuta, convexa, atra, nitida, circulari-gregaria. Ascis clavatis. Sporidiis biseriatis, inæqualiter uniseptatis, fuscis (·012 × ·006 mm.).

On living leaves of *Leguminosæ.* No. 49.

Forming orbicular spots on both surfaces, almost with the habit of a *Sphærella.*

Dothidea scabies, *Kalch. & Cke.*

Amphigena. Maculæ fuscæ, orbiculares. Pseudo-peritheciis gregariis, convexis, atris, subopacis. Ascis clavatis. Sporidiis ellipticis, continuis, fuscis (·025 × ·01 mm.).

On unknown leaves. Natal. No. 50. Caffraria. No. 48.

Stigmatea sutherlandiæ, *Kalch. & Cke.*

Phyllogena, punctiformis, atra, elevata, convexa, nitida, sparsa. Ascis clavatis. Sporidiis ellipticis, continuis, hyalinis (·01 × ·005 mm.).

On fading leaves of *Sutherlandia.* No. 1415.

Stigmatea rhynchosiæ, *Kalch. & Cke.*

Epiphylla, atra, nitida, convexa, gregaria, in maculis orbicularibus disposita, numerosa, minutissima. Ascis clavatis. Sporidiis ellipticis, hyalinis, continuis, binucleatis (·012 × ·006 mm.).

On living leaves of *Rhynchosia.* No. 55.

Perithecia more numerous, and not one-third the size of those of *Dothidea circinata,* K. & C., which it somewhat resembles.

Rhystisma grewiæ, *Kalch.*

Epiphylla, piceo-atra, orbiculares, applanata. Cellulis circumdatis, convexis, fissurato-dehiscentibus. Ascis clavatis. Sporidiis sublanceolatis, hyalinis, continuis, binucleatis (·04 × ·007 mm.).

On living leaves of *Grewia occidentalis.* No. 106.

Asterina capensis, *Kalch. & Cke.*

Sparsa. Peritheciis orbicularibus, fuscis (·15 mm. diam.) mycelio fusco, radiante circumdatis. Ascis clavatis. Sporidiis ellipticis, uniseptatis, fuscis (·016 × ·006 mm.).

On living leaves of *Hippobromus alatus.* No. 1328.

The mycelium is furnished with short uniseptate processes on each side, which are often opposite to each other. A few erect rigid setæ are mixed with the perithecia.

Asterina erysiphoides, *Kalch. & Cke.*

Minima, gregaria. *Erysiphis* species simulans. Peritheciis applanatis, discoideis (·06-·1 mm. diam), atrofuscis, membranaceis, radiato-cellulosis : mycelio tenui, ramoso, fusco, circumdatis. Sporidiis ellipticis, continuis, atrofuscis (·018-·02 × ·01 mm.).

On leaves of *Jasminum tortuosum.* No. 1139.

Asterina ditricha, *Kalch. & Cke.*

Hypophylla, effusa, fuliginea. Mycelio radiante, ramoso, atrofusco, processibus papillatis, gangliformibus ornatis. Hyphis tennioribus, ramosis, conidiiferis immixtis. Conidiis fusiformibus

triseptatis, fuscis (·015-·016 × ·004 mm.). Perithecia discoidea, imperfecte evoluta.

On living leaves of some *Celastrus*. No. 3.

In the absence of perfect perithecia, it can only be thus provisionally described.

Asterina confluens, *Kalch. & Cke.*

Epiphylla, crustacea, membranacea. Peritheciis applanatis, discoideis, confluentibus, radiato-cellulosis, hinc illic maculis crustaceis efformantibus.

On fading leaves of *Plectronia ciliata*. No. 1331.

There are no definite radiating threads, and no asci or sporidia have yet been detected, so that this imperfect diagnosis must be accepted as provisional. The perithecia are one-tenth of a millemetre in diameter.

Asterina fimbriata, *Kalch. & Cke.*

Epiphylla. Peritheciis gregariis, radiato-fibrosis, convexo-applanatis, atro-fuscis, stellato-fissurato dehiscentibus ; margine fimbriato (·15 mm. diam.). Ascis saccatis, pyriformibus. Sporidiis ellipticis, profunde constrictis, uniseptatis, fuscis (·015 × ·008 mm.).

On living leaves of *Sclerochiton Harveyanum*. No. 1290.

The perithecia are collected together in little brown patches.

Asterina reticulata, *Kalch. & Cke.*

Phyllogena, effusa, fuliginea. Peritheciis convexo-applanatis, reticulato-fimbriatis, fuscis (·15 mm. diam.). Mycelio intricato, ramoso, anastomoso, reticulato, fusco, processibus hamatis bicellulatis ornatis. Ascis clavatis. Sporidiis ellipticis, atro-fuscis, medio fasciâ hyalinâ ornatis (·016-·018 × ·007 mm.).

On living leaves of *Olinia cymosa*. No. 1336.

The dark opaque sporidia, with a transverse hyaline band in the centre, are peculiar.

Asterina solaris, *Kalch. & Cke.*

Amphigena, crustacea, atra. Peritheciis convexis, centro depressis, atro-fuscis, densissime radiato-strigosis. Ascis ? Sporidiis ellipticis, 1-2 septatis, fuscis (·02-·025 × ·008 mm.).

On living leaves of *Olea verrucosa*. No. 1307.

The parallel simple radiating fibres of the perithecia are often longitudinally attached in bands. Small obtuse papillæ project at right angles from some of the threads.

Asterina Macowaniana, *Kalch. & Cke.*

Atra, effusa. Peritheciis gregariis, discoideis, applanatis (·1 mm. diam.), mycelio radiante nidulantibus. Ascis pyriformibus. Sporidiis ellipticis, uniseptatis, constrictis, fuscis (·02-·022 × ·00 mm.).

On leaves of *Celastrus buxifolius*.

This is apparently *Meliola Macowaniana*, Thumen, but it is in no respect a *Meliola*, from which genus the flattened perithecia are quite sufficient to separate it.

Meliola polytricha, *Kalch. & Cke. in Grevillea* VIII., *p.* 72.
On living leaves of *Osyris compressa.* No. 1256.
And *Cunonia capensis.* No. 1262.

Meliola ganglifera, *Kalch.*
Hypophylla, maculis fuligineis orbicularibus efformans. Conceptaculis globosis, subverrucosis, atris (·15-·2 mm.). Appendiculis erectis, subulatis, simplicibus. Mycelio ramoso, repente, processibus subglobosis stipitatis, conico-verrucosis, ornato.
On living leaves of *Curtisia faginea.* No. 1349.
The ganglia-like processes of the mycelium are peculiar. They are nearly globose, shortly stipitate bodies, clad with obtuse conical warts. Asci and sporidia not seen.

Meliola inermis, *Kalch. & Cke.*
Amphigena, atra. Peritheciis globosis, hinc illic congestis (·2-·25 mm. diam.), mycelio ramoso, fusco, nidulantibus. Appendiculis nullis. Ascis clavatis. Sporidiis 2, ellipticis, quadriseptatis, constrictis, fuscis (·055 × ·015 mm.).
On living leaves of *Buddleia auriculata.* No. 1251.
This does not accord with *Meliola quinquespora,* Thumen, for it is not five spored ; nor with *Meliola quinqueseptata,* Rehm. ; for the sporidia are not five septate; and yet specimens from both authors under these names are the same thing. There is clearly an error somewhere, which we leave to those mycologists to correct.

DR. A. MINKS ON THE MICROGONIDIA OF LICHENS.

Dr. Minks has communicated to the " Revue Mycologique " a summary in the French language of the leading points in his new theory of the physiology and morphology of lichens. He is persuaded that a great number of students are ignorant of his researches because they are not familiar with the language in which they are written. In addition to this cause he thinks that many hold it to be dangerous to differ in opinion with certain eminent men who have accepted the earlier scientific views as finally and definitively settled. He regards the train of argument adopted to establish the Schwendenarian doctrine as humiliating to modern physiology as it is altogether based on false premises, and appeals to his recently published work and his article in the " Flora " of 1878, and to the plates given them to establish beyond doubt the correctness of his new views. Space prevents our giving more than a brief epitome of his communication, for further information the reader must consult his recently published book " Das Microgonidium."*

* Das Microgonidium. Ein Beitrag zur Keuntniss des wahren der Flechten, von Dr. Arthur Minks. Bale, 1879.

The presence of gonidia excludes the idea of lichens living as parasites on other plants or on bodies in a state of decomposition. They owe this to the chlorophyl they contain, which gives to the gonidia their colour. The granular contents of the gonidia consist principally of corpuscles which are the microgonidia and must be placed in a higher rank than the chlorophyl substance itself. These microgonidia are capable of arranging themselves in beautiful harmony contributing to the formation and increase of the gonidial cell without losing their independence, and playing a part which controls the whole development of the reproductive and vegetative life to the final end—the production of asci. The microgonidia maintained a globose form, slightly flattened, somewhat like a convex lens, having in its centre a transparent and highly refractive nucleus, surrounded by a green zone, enveloped by a rather thin, white, protoplasmic layer, which is not always visible. In harmonious conformity to this structure all the cells of the lichen body, even to the completion of its life—the asci—are more or less confined, maintaining this form even during all the phases of development and growth, during which the microgonidia enormously increase. There are two modes of increase—by division and by progemmation, the first altogether resembling cell-division. This proves that the microgonidia are protoplasmic bodies to which the existence of a membrane, at least in the most abstract condition, cannot at present be proved. The connection of the microgonidia with their cells is visible principally by the uniformity with which the simultaneous division of the cell itself and its microgonidia takes place.

It is necessary to state that the intensity of the green of all the living gonidia certainly depends on the microgonidial cells alone, but essentially on the quantity and arrangement of these corpuscles. It is possible that the microscopic image of the veritable gonidia presents itself as absolutely colourless, as do some "metrogonidia" ("heterocyots" "Greuzzellen") of the *Collemaceæ*, because the distance of the conglomerated microgonidia appears much more considerable all round the cell membrane owing to the refraction of the colourless parts predominating. For this reason also the microgonidia distributed in the hyphæ have remained up to the present invisible, their cells always appearing destitute of green colour. But the impossibility of recognising this is accounted for by employing insufficient objectives to the microscope. The powers necessary to be used have already been named in the "Revue." Anyone having access to my work will, I am sure, by the aid of my figures find proof of the existence and activity of the microgonidia throughout all the process of vegetation and reproduction; and he will readily perceive that these corpuscles are in fact the thread of *Ariadne* which ought to guide him through the labyrinth of the anatomy and morphology of lichens.

The homogeneousness of the hyphæ of lichens and fungi has no

existence, for the hyptra cell of the lichen, as the gonidial cell together with each cell of the lichen, is capable of pysiological activity, such as appertains to all vegetable cells that contain chlorophyl; and as regards systematic botany the presence of gonidia appears to be the criterion between these two great vegetable kingdoms, for the microgonidia are characteristic of lichen cells only.

The greater part of lichens, if not all, do not grow by a simple increase of the cells of the two systems of tissue; the development of the gonidial tissue results from the hyphæ tissue and never the reverse. The series of microgonidia running through the axis of the hypha threads and filling up by conglomeration the gonidial cells is in fact a series of gonidia in the embryonic stage. The moment the microgonidia secrete a membrane they become true gonidia, which commence, either in the mother cell or after its breaking up, to take on the known form, producing at the same time new microgonidia. There is no doubt that the development of the gonidia issuing from the hyphæ cells or from the gonidial cells does not take place without order in lichens, but either one predominates or the other, according to certain fixed rules for certain ends.

It is evident that the gonidia cannot augment exclusively by division or progemmation as do the hyphæ, there must be some other source, to the present invisible, whence issues the hyphoidal tissue. The new tissue, the *hyphéme*, is, I believe, the most delicate in nature, and as far as is known, the lenticular cells of this tissue are excessively minute, and their mutual connexion exists only at a single point. The study of the *hyphéme*, the existence of which is already difficult to establish, presents inexpressible difficulties.

The absolute necessity of the *hyphéme* is manifest in certain phenomina of growth, especially in the work of reproduction. Primarily the *hyphéme* accompanies or pursues each reproductive extension of the Mallus which in the same lichen may partake of many types, and exhibit itself in the greater part of lichens in enormous quantities. In each case of reproduction it establishes an initial point due to an elementary organ, arising it may be from the gonohyphéme, or the gonidéme, or the hyphéme, throwing out, nevertheless, only the basis of the gonidéme, with which is associated the maternal hyphéme to be completed by the germ of the hyphoidal tissue, the reproductive lichen organ.

This co-operation on the part of the hyphéme is an evident fact amongst some blastémes, but especially amongst the hormospores discovered by me, and principally amongst the mecaspores, which uniquely, by means of a hypematic capsule, become capable of reproducing a lichen. Unfortunately I have not been able to do more than roughly sketch the activity of the hyphéme in my drawings for a magnifying power of 2,000 diameters would be necessary for the purpose of properly drawing it.

The mecaspore of the lichen is without doubt a gonidial organ proceeding from the gonohyphéme which can be seen at a glance from my drawings, and especially in the fresh living spores of Septogium, which resemble, to describe them briefly, a little colony of *Nostoc*. Besides, it may be seen that the mecaspore is only the product of free intercellular formation; for the microgonidia contained in all the cells of the fructifying parts are equally here in morpheological activity, from the commencement to the end. These phenomena sufficiently prove that the meci and paraphyses bear to each other the relation of fertile to sterile hyphæ.

It is almost impossible, without the aid of figures (which are not given in the *Revue)*, to convey an adequate notion of Dr. Minks's theories, and we much doubt whether we have caught the exact meaning of the author, owing in some measure to the fact that he is not writing in his native language, but more especially on account of his views being quite novel, and subversive of our preconceived notions of the morphology and physiology of lichens.

(Translated and abstracted by W. Phillips, F.L.S., from *Revue Mycologique)*.

PREPARATION OF GREEN ALGÆ.

By Prof. O. Nordstedt.*

Last summer I collected at Jönköping the rare and in many respects interesting alga *(Sphæroplœa annulina)*. This alga has the chlorophyl in the sterile cellules arranged in transversal bands or rings. As I tried to dry them, I found that the rings were destroyed by getting dry. I repeatedly tried to get good microscopical preparations by using "liquor Hantzschiæ" as well as acetate of potassium, but when without success I applied warmth. I put a small bottle containing the alga in water on a black object, and exposed it to strong sunlight for a couple of hours. When the alga afterwards was dried, the rings proved to be pretty well preserved; when afterwards heated by a spirit lamp, the thermometer indicated that the rings when boiled—

½ minute at 35-40° Cels.	Did not keep, or were very ill-preserved.
When boiled 5-10 minutes at 45° Cels. ½ minute at 50°-98° „	The rings kept very well.
10 minutes at 60° Cels. 2 minutes at 98°† „	The rings were separated from the membrane and placed in the centre alongside the cellule.

* Translated from "Botanische Notiser," by Dr. S. Berggren.

† To more than 98° Cels. I could not manage the thermometer to rise.

It appears to be most convenient for the purpose to use 40°-50° Cels. during about two minutes.

In the *Spirogyra* the chlorophyl bands, when the plant is boiled, also keep tolerably well. I therefore often have applied heat in preparing them. The different species seem to require different degrees of heat.

ADDITIONAL BRITISH DESMIDS.

By M. C. Cooke.

Since the notice of "British Desmids" in our last, we have had the opportunity of consulting a collection of an extensive character, made over a period of many years, by Mr. A. W. Wills, of Wylde Green, and found amongst them the following species, which had only been previously recorded in Ireland :—

Tetrachastrum mucronatum, *Dixon.*
In all intermediate stages between the typical form and *Tetrachastrum oscitans*, R.
From N. Wales.

Micrasterias angulosa, *Hantsch.*
In Sutton Park, near Birmingham.

Cosmarium pseudopyramidatum, *Lund.*
North Wales.

Cosmarium speciosum, *Lund.*
Dunkeld.
Two or three other species of *Cosmarium* not yet determined.

Staurastrum cerastes, *Lund.*
Barmouth.

Docidium nodosum, *Bailey.*
Found at Barmouth, August, 1867.

Closterium directum, *Archer.*
Sutton Park, near Birmingham.

Closterium Pritchardianum, *Archer.*
Barmouth, N. Wales.

Closterium gracile, *Breb.*
Barmouth, N. Wales.

Closterium cynthia, *De Not.*
Sutton Park, near Birmingham.
Apparently this species, with a striated membrane, although not so robust as the figure by De Notaris.

Penium Nageli, *Breb.*
Sutton Park, near Birmingham.

Spondylosium pulchellum, *Archer.*
N. Wales.

Spondylosium pygmæum, *(Rabh.) Cke.*
Barmouth, N. Wales.

This is decidedly a *Spondylosium*, with a hyaline sheath, but it is as equally certain that the *Cosmarium tinctum*, Ralfs., which is called a *Spondylosium* by Rabenhorst, and other Continental authors, is *not* a *Sphærozosma* or *Spondylosium*, but a good *Cosmarium*. And we very much doubt if *Cosmarium pygmæum*, Archer, is any other than a *Cosmarium*, although called *Sphærozosma* by Rabenhorst. Mr. Archer is too critical and experienced an observer to have made such a mistake. This Desmid, however, may throw some light upon the subject. It has probably been confounded with the true *Cosmarium pygmæum*, Ar., from which, notwithstanding its uniform size and appearance, we are disposed to regard it as distinct. At any rate, without stronger evidence than we yet possess, we cannot exclude the *Cosmarium* from our list. The present *Spondylosium* even when divided up into the *Cosmarium* form, still retains evidence of the hyaline sheath. Faint radiating lines, which are liable to be mistaken for cilia may, almost invariably, be observed, and these are evidently the margins or thickenings in the sheath. This may be verified by the introduction of aniline solution, or some coloured fluid.

Cryptogamic Society of Scotland.—The Sixth Annual Conference will be held in Glasgow, on September 27th-30th, and October 1st and 2nd, 1880, when all persons interested in Cryptogamic Botany are invited to attend.

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No. 50.] [December, 1880.

Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

"ANIMAL NATURE" OF MYXOMYCETES.

In a work recently published on the *Infusoria*, by Mr. Saville Kent, the exploded doctrine of the animal nature of *Myxomycetes* is revived in the following words—"Formerly, and by some even yet regarded as a low order of fungi, or as a special group of organisms intermediate between animals and plants, which exhibit at one epoch of their life all the vital characteristics of the former, and at another those of the latter kingdom, their admission into the Protozoic galaxy or system will no doubt encounter objection. The evidence most recently and independently eliminated by L. Cienkowski and Dr. A. de Bary concerning the structure and life history of this most remarkable group, establishes, however, beyond question their purely animal nature." After recapitulating, in a summary compiled from De Bary's work, the phases of the life history of the *Myxomycetes*, the author proceeds to identify them with the sponges. "In both the formation of the gigantic compound plasmodium, and in the development therefrom of the characteristic sporangia, these *Myxomycetes* exhibit certain phenomena singularly suggestive of a more or less remote affinity with the sponges. In these latter also the initial term takes the form of spore-developed uniflagellate monads, which uniting in social colonies, form a gelatinous mass, corresponding closely with the plasmodial element of the former group. In the fine horny network, usually contained with the spores within the sporangium developed by the mature plasmodium, a substance is produced singularly resembling the fine horn-like elements or keratose fibre of certain sponges, while, what is still more remarkable, in certain forms spicule-like bodies, composed of carbonate of lime, are also developed within the substance of the walls of the sporangium, or so called 'peridium,' that accord substantially in outline with the stellate siliceous spicula of the *Tethyidæ*, and other familiar sponge groups. In illustration of the apparent close approximation of the *Mycetozoa* to the spongida and other flagellate *Protozoa*, as here presumed, the lower half of Plate xi. of this volume, with its accompanying descriptions, has been devoted to a reproduction of some of the more characteristic figures given by De Bary and

Cienkowski in the works quoted, that would appear to substantially support the author's views."

Competent, as Mr. Kent has shown himself to be, to deal with the *Infusoria*, it is much to be regretted that he should have gone out of the way to meddle with a subject which it requires only a perusal of what he has written to discover that he does not understand. It is quite unnecessary to do more than utter a protest against the assumptions of this author, inasmuch as mycologists will accept his opinions for what they are worth. Those who are *not* mycologists might perhaps be induced to accept what has been written as acknowledged science, instead of exploded theory, but for some such protest.

It is quite true that De Bary wrote a book twenty years ago, in a hurry, and repented at leisure. He then believed in the animal nature of the *Myxomycetes*, or he thought that he did, which amounts to the same thing. In like manner he at first propounded the basis of the Swendenerian theory of Lichens, and then said no more about it. So also he opposed the discovery of the oogonia of the *Peronospora*, and believed them to be something else, as long as he could. Probably he now adheres to none of these three failures, because he has discovered at leisure that they are all fallacies. It is certain that he no longer holds the opinion that the *Myxomycetes* belong to the animal kingdom, but holds and teaches that they are veritable plants. Despite of this, the theory propounded twenty years ago, and since rejected by its author, Mr. Kent, says, "The evidence most recently and independently eliminated by L. Cienkowski and Dr. A. de Bary concerning the structure and life history of this most remarkable group, *establishes, however, beyond question, their purely animal nature.*"

The italics are ours. The assumption we deny. The animal nature of the *Myxomycetes* rests on similar and no better evidence than the animal nature of the zoospores, so common in algæ, or the animal nature of diatoms, and, therefore, "beyond question" has no place in the sentence. When those who are best acquainted with the *Myxomycetes*, such as the mycologists who have made them a special study, accept them as "beyond question of a purely animal nature," it will be time enough for those who are not practically acquainted with these organisms, to assume such a dictum as "beyond question." To assert, in the face of all the best authorities in mycology, that "the animal nature of *Myxomycetes* is "beyond question," is an assumption of superior intelligence of which no author of good taste would be guilty.

Without waiting to enquire what this writer knows of the important Polish and Russian works on the *Myxomycetes*, which have appeared during the past twenty years, since they do not support his views, we would note the concluding paragraph of our extract from his work. It is clear from this that he has based his theory upon the figures which he has observed in illustrated books. Had he practically examined the organisms themselves he would have

made his own drawings of such simple structures, and not accepted them at second hand. Then, he would have learnt how deceptive mere *form* can be, and that the "fine horny net work, usually contained with the spores within the sporangium," and also the "spicule-like bodies composed of carbonate of lime developed within the substance of the walls of the sporangium" are not so very much like the keratose fibre, and spicules of sponges after all. The late Dr. Bowerbank knew something of fungi, and Mr. H. J. Carter has examined *Myxomycetes* closely, and for this reason, although both are acknowledged as supreme authorities on sponges, they never recognised the close affinities between sponges and *Myxogasters*.

If we would seek the reason why this effort has been made to squeeze the *Myxomycetes* into the animal kingdom by stealth, it may be found illustrated by the following definition—"The broad distinction insisted upon as subsisting between unicellular plants and animals is the capacity of animal organizations to incept and digest food-matter in its solid form, and the corresponding absence of such an inceptive faculty in all vegetable organisms." Taking this as an absolute distinction between animals and plants, the *Myxomycetes* are declared to be "undoubted animals," because they do not "undoubtedly" incept and digest food-matter in its solid state.

Logic is again defied when animals of a very simple organization are admitted to a place in the scheme, although they do *not* "incept and digest food-matter in its solid form," but, on the contrary, "derive their nutriment by absorption from the fluid which they inhabit." It is not, however, our intention to fight with these shadows of reasons for regarding the *Myxogasters* as animals. Our author has declared their "undoubted animal nature." To this we join issue, and declare our belief in their truly vegetable nature. The onus rests with him to substantiate his position, and produce his evidence, but it must be something more than the mere citation of De Bary and Cienkowski.

GEASTER COLIFORMIS IN NORFOLK.

I was much pleased to receive from my friend, Dr. J. D. Alexander, of Grimston, on Saturday last, September 25th, 1880, four fresh specimens of this rare *Geaster*, which, as far as I can make out, has not been found in Britain since the first decade of the present century. The specimens grew on a hedge bank in the village of Hillington, Norfolk. The largest of them measures six inches across the widest part of the outer coat or peridium, which is divided into ten unequal rays; the inner peridium is no less than two inches in diameter, and has the beautiful silver-grey lustre mentioned by the older botanists, since whose time the fungus has hardly, if at all, been gathered in this country. In the specimen

before me, as I write, the inner coat or peridium shines as if it were covered by a very thin coating of silver leaf, totally unlike any other *Geaster*. It has no less than 40 distinct openings upon it. Another character, not noticed in the text-book, is that the inner peridium is minutely tuberculated. Neither of these points struck me when I examined the specimen in the British Museum herbarium some years ago; but they are both observable on careful observation in a specimen my friend, Prof. C. A. J. A. Oudemans, of Amsterdam, sent me from Haarlem, gathered by him in January, 1877.

As showing the rarity of this species generally, it is worthy of note that Persoon, when he wrote the Synopsis in 1801, had seen no specimen, neither had Fries, when he wrote the Systema, in 1829. In this country it has been found (1) by Doody, "in the lane from Crayford to Bexley Common" (Ray, Synop., ed. iii., p. 27, 1724); (2), by Mr. Merrett, at Hampton Court; (3), on sandy banks at Mettingham, Suffolk, and at Gillingham and Earsham, Norfolk, by Messrs. Stone and Woodward (Linnean Trans., vol. ii., p. 59); (4), at Hanley Castle, Worcestershire, by Messrs. Ballard and Rufford (Withering, ed. ii., vol. iv., p. 460, 1792; Purton, Midland Flora, vol. ii., p. 702; No. 1075, 1817). On the Continent it has been found at Haarlem and near Darmstadt (Fuckel, Symb. Myc., p. 37). The figure given (in vol. ii., plate xv.) by Mr. Worthington G. Smith, after Sowerby, t. 313, conveys a very accurate idea of the general appearance and habit of this fine *Geaster*.—Charles B. Plowright, in "Gardener's Chronicle," Oct. 2, 1880.

Geaster coliformis.—I have read Mr. Plowright's communication, at p. 439, as to *Geaster coliformis*, in which he suggests that the plant has not been found in England since 1810. I am not aware of any published notice of it, but knowing that my friend, Mr. G. B. Wollaston, had found it long since that time, I made enquiry of him. He tells me he found it in 1830, at Westwood, near Southfleet, in Kent, and again between 1836 and 1840 at Bridgen, near Bexley, in Kent; also that in 1840 he saw a specimen found by a lady at East Wickham, near Plumstead, in Kent; and he adds, "I have since found it recently, but when and where I do not recollect." I have thought that these facts might be of interest to your mycological readers.—Fredk. Currey, "Gardeners' Chronicle," Oct. 16, 1880, p. 506.

BRITISH SPECIES OF SPIRULINA.

Some difficulty having arisen through lack of figures of *Spirulina* whereby one species has been confounded with another, we have given the figures of three species on Plate 139. Of these fig. 1 represents *Spirulina tenuissima*, Kutz, found in brackish ditches at Northfleet, Kent, of which the portion marked *b* is still more

highly magnified than our usual scale of 420 diameters. Fig. 2 is *Spirulina Jenneri*, Hass., found in several localities during the past year, with the articulations quite distinct, as shown also on an enlarged scale, at *b*. And fig. 3 is *Spirulina oscillarioides*, Turp., drawn from Rabenhorst's Algæ, No. 1015, which name inadvertently has been applied to *Spirulina Jenneri*, a much nobler species. All these figures are drawn to the same scale, as near as their minute diameter would permit. The other figures on the same plate represent some species of *Staurastrum* found by Mr. Wills in North Wales, of which two additional plates are prepared for a succeeding number.

Pl. 139, Fig. 1 Spirulina tenuissima, *Kutz.*
„ 2 Spirulina Jenneri, *Hass.*
„ 3 Spirulina oscillarioides, *Turp.*
„ 4 Staurastrum grande, *Lund.*
„ 5 Staurastrum sebaldi, *Remsch*, var.
„ 6 Staurastrum anatinum, n.s.

SOUTH AFRICAN FUNGI.

(*Continued from p.* 34).

The following is a description of the four plates which accompany the text from pages 17 to 34. The plates are numbered from 135 to 138. The majority of the figures are drawn to the same scale as previous plates in this Journal, about 420 diameters, and also to the same uniform scale of the figures in "Mycographia."

DESCRIPTION OF PLATES.

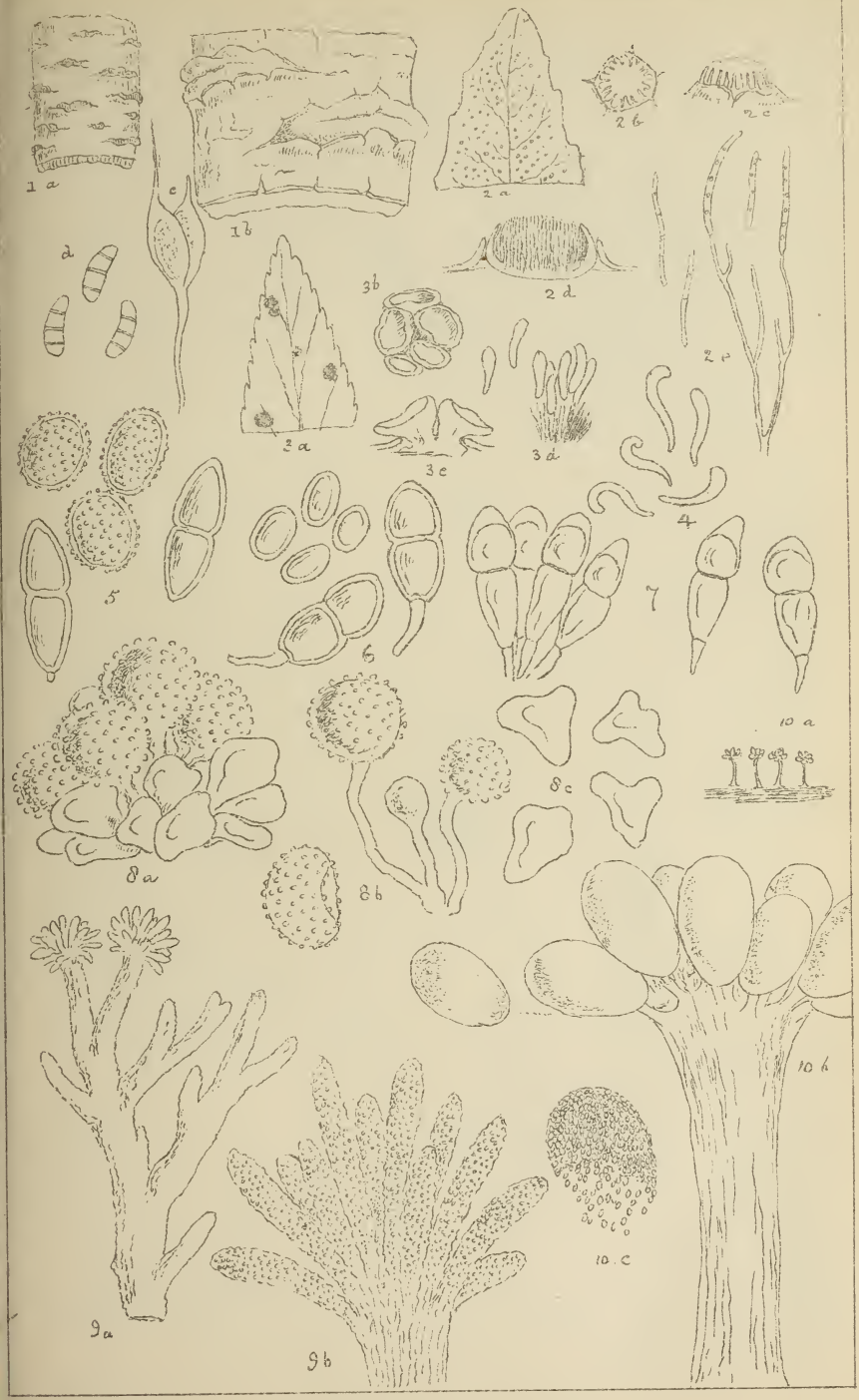
Pl. 135, f. 1.—*Tremella micropera*, K. & C. *a*, nat. size; *b*, enlarged; *c*, basidium; *d*, spores × 450.
„ 2.—*Protostegia Euclew*, K. & C. *a*, nat. size; *b*, *c*, enlarged receptacles; *d*, section, enlarged; *e*, spores × 450.
„ 3.—*Oncospora viridans*, K. & C. *a*, nat. size; *b*, a cluster enlarged; *c*, section; *d*, spores × 450.
„ 4.—*Oncospora bullata*, K. & C. Spores × 450.
„ 5.—*Puccinia helichrysi*, K. & C. Spores of both kinds × 450.
„ 6.—*Puccinia ornithogali*, K. & C. Spores of both kinds × 450.
„ 7.—*Puccinia Africana*, K. & C. Spores × 450.
„ 8.—*Hemileia Woodii*, K. & C. *a*, cluster of fruit × 450; *b*, isolated sporangia; *c*, barren cysts × 450.
„ 9.—*Isaria coralloidea*, K. & C. *a*, portion of tuft × 70; *b*, tip of branch × 450.
„ 10.—*Polycephalum aurantiacum*, K. & C. *a*, nat. size; *b*, individual × 450; *c*, spores × 500.

Pl. 136, f. 11.—*Ramularia Richardiæ*, K. & C. Spores × 450.
„ 12.—*Ramularia rumicis*, K. & C. Threads and spores × 450.
„ 13.—*Epochnium phyllogenum*, K. & C. Portion of hyphæ with spores × 450.

Pl. 136, f. 14.—*Menispora cylindrica*, K. & C. Hyphæ, and spores × 450.
„ 15.—*Fusicladium fuliginosum*, K. & C. Hypha, and spores × 450.
„ 16.—*Cercospora hæmanthi*, K. & C. Spores × 450.
„ 17.—*Cercospora commelynæ*, K. & C. Spores × 450.
„ 18.—*Exosporium celastri*, K. & C. Portion of tuft with spores × 450.
„ 19.—*Helotium capensis*, K. & C. Cup, nat. size; *a*, asci and spores × 450.
„ 20.—*Dermatea rufa*, K. & C. Section of cup enlarged, with spores × 450.
„ 21.—*Phillipsia kermesina*, K. & C. (*Helotium purpuratum*, K.) *b*, section of cup nat. size; *a*, asci and sporidia × 450.
„ 22.—*Stictis bella*, K. & C. Cups enlarged.
„ 23.—*Sphærostilbe rosea*, K. Cluster enlarged, with conidia × 450.
„ 24.—*Sphærostilbe nigrescens*, K. & C. Cluster enlarged; *a*, conidia × 450; *b*, sporidia × 450.
„ 25.—*Sphærostilbe hypocreoides*, K. & C. Stroma, with section, enlarged; sporidia × 450.

Pl. 137, f. 26.—*Xylaria stilboidea*, K. & C. *a*, nat. size; *b*, enlarged; *c*, sporidia × 450.
„ 27.—*Lasiosphæria capensis*, K. & C. Sporidia × 450.
„ 28.—*Ceratostoma cylindrica*, K. & C. Ostiola enlarged, with asci, and sporidia × 450.
„ 29.—*Sphæria Africana*, K. & C. Perithecium enlarged; asci and sporidia × 450.
„ 30.—*Sphæria intercepta*, K. & C. Sporidia × 450.
„ 31.—*Sphæria metuloidea*, K. & C. Sporidia × 450.
„ 32.—*Sphæria cercispora*, K. & C. Sporidia × 450.
„ 33.—*Sphæria Owaniæ*, K. & C. Sporidia × 450.
„ 34.—*Pleospora lanceolata*, K. & C. Sporidia × 450.
„ 35.—*Pleospora refracta*, K. & C. Sporidia × 450.
„ 36.—*Venturia cephalariæ*, K. & C. Asci and sporidia × 450.
„ 37.—*Dothidea oleafoliæ*, K. & C. Sporidia × 450.
„ 38.—*Dothidea arduinæ*, K. & C. Sporidia × 450.
„ 39.—*Dothidea scabies*, K. & C. Asci and sporidia × 450.
Pl. 137, f. 40.—*Rhytisma grewiæ*, K. & C. Sporidia × 450.
„ 41.—*Asterina capensis*, K. & C. Asci and sporidia × 450.
„ 42.—*Asterina erysiphoidea*, K. & C. Perithecium with sporidia × 450.
„ 43.—*Asterina ditricha*, K. & C. Hyphæ and conidia × 450.
„ 44.—*Asterina Macowaniana*, K. & C. Asci and sporidia × 450.
„ 45.—*Asterina confluens*, K. & C. Perithecia × 450.

Pl. 138, f. 46.—*Asterina fimbriata*, K. & C. Perithecium magnified; *b* sporidia × 450.
„ 47.—*Asterina reticulata*, K. & C. Perithecium magnified; *b*, portion of mycelium; *c*, sporidia × 450.
„ 48.—*Asterina solaris*, K. & C. Perithecium enlarged; *a*, hyphæ, × 450.
„ 49.—*Meliola ganglifera*, K. & C. Portion of mycelium × 450; *b*, further magnified.
„ 50.—*Meliola polytricha*, K. & C. *a*, hyphæ and conidia × 450; *b*, perithecium enlarged.
„ 51.—*Meliola inermis*, K. & C. *a*, portion of mycelium × 450; *b*, asci and sporidia × 450.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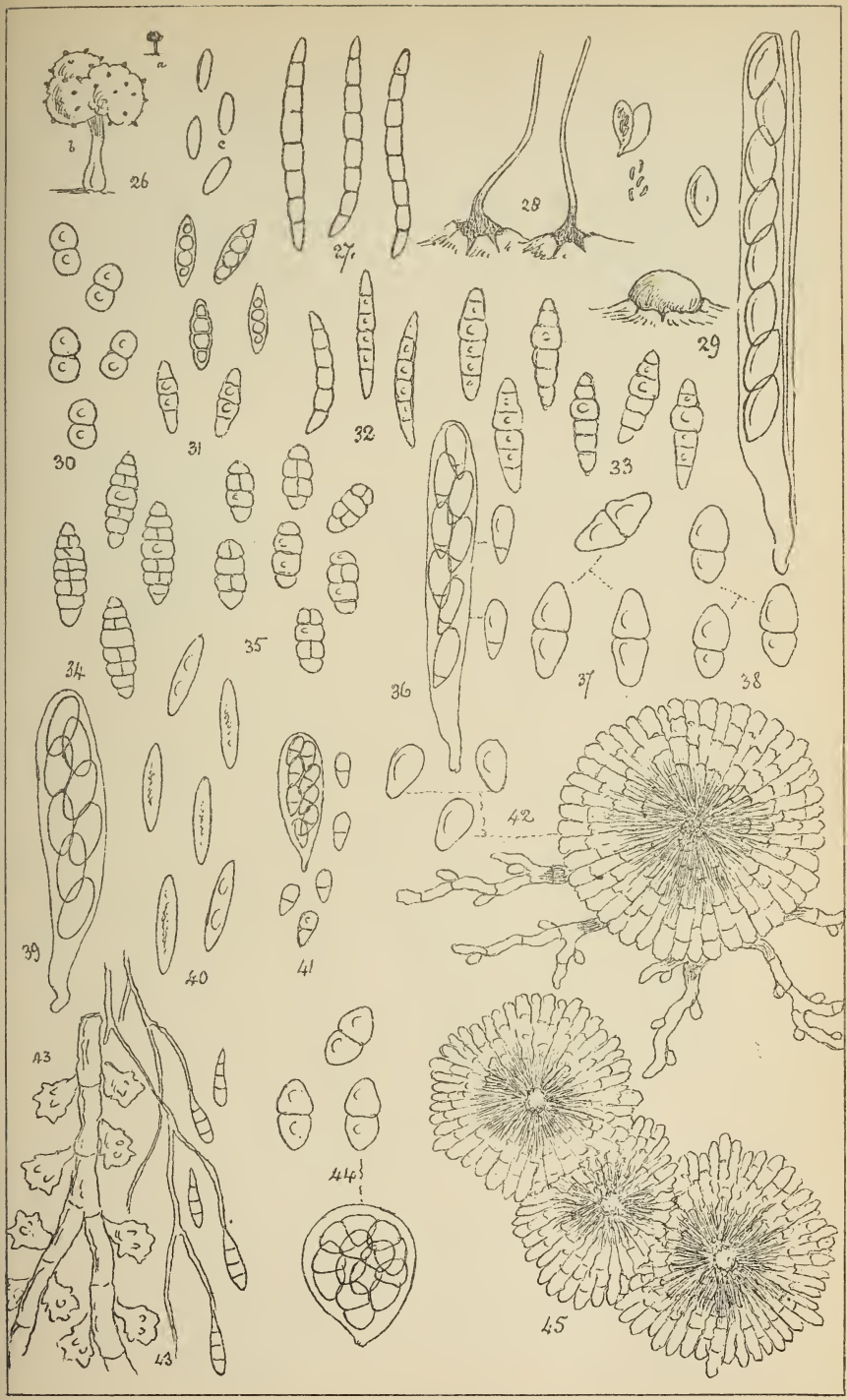
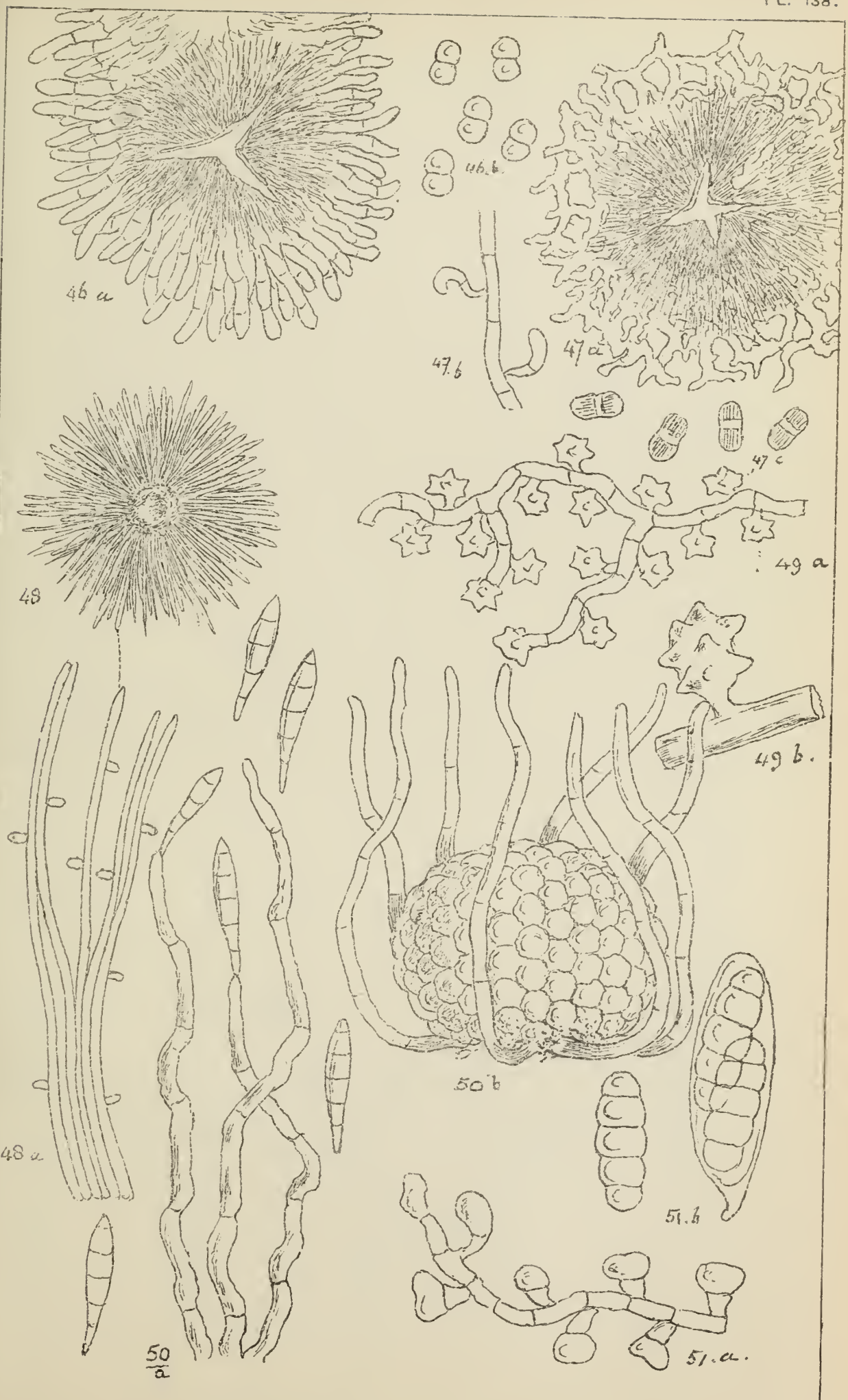
SOUTH AFRICAN FUNGI.



SOUTH AFRICAN FUNGI.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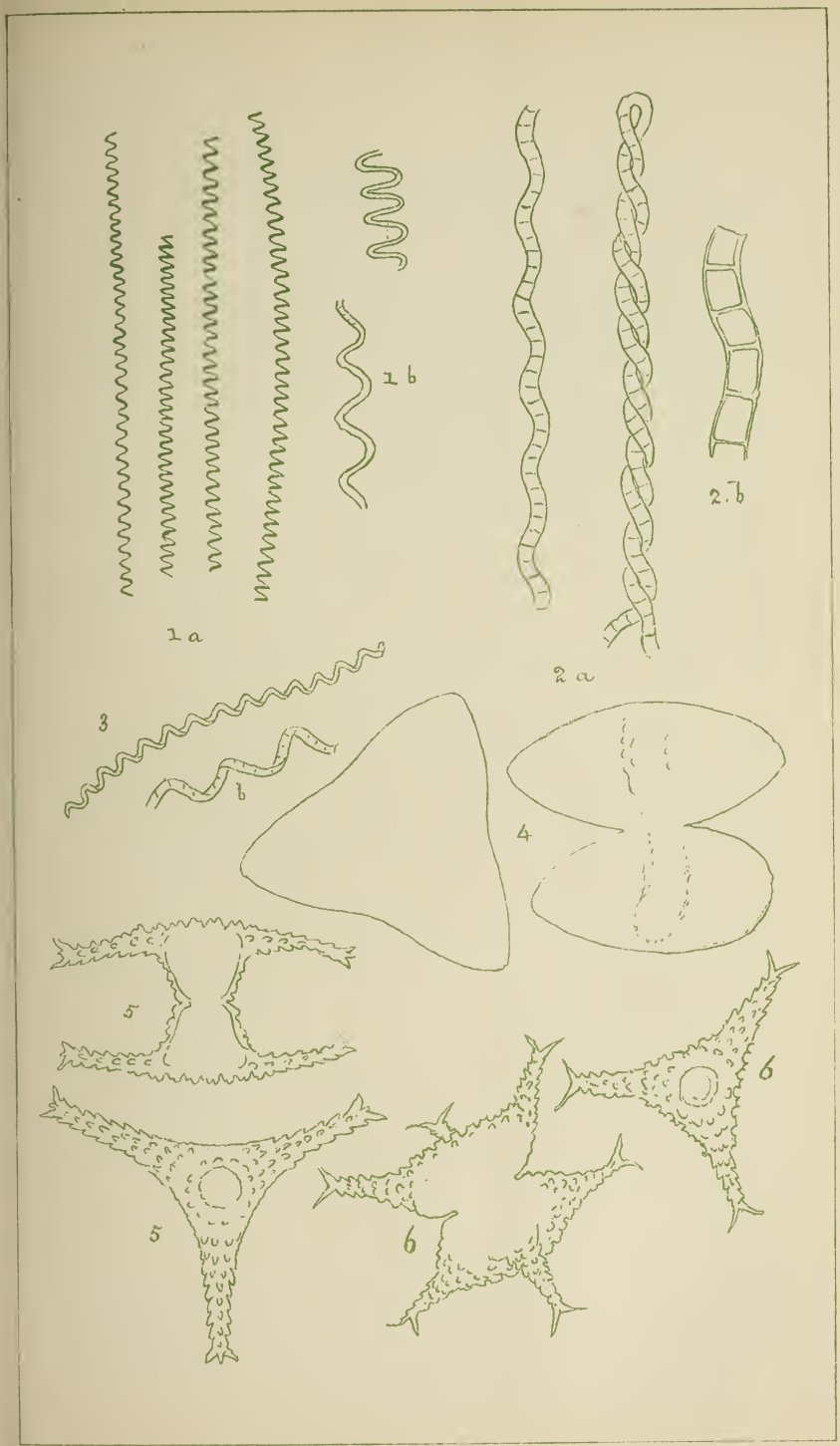

SPIRULINA *and* *Staurastrum.*

ON SPORE DIFFUSION IN THE LARGER ELVELLACEI.*

By Chas. B. Plowright.

We have all frequently observed the clouds of sporidia, resembling puffs of smoke, which take place from the hymenia of the larger *Peziza* in a ripe condition. These jet-like expulsions of sporidia are apt to convey a very incorrect notion of the manner in which the fruit of this group of fungi is disseminated under ordinary circumstances. The jet-like clouds of smoke are the result of the rupture of a number of asci simultaneously. They occur only when the *Peziza* has attained full maturity, the asci being, so to speak, in a state of tension from their contents having attained the maximum amount of development. Under such circumstances the giving way and consequent emptying of one ascus disturbs the equilibrium of those in immediate contact with it, and as they are fully matured, the slight concussion thus produced is a sufficient exciting cause, to render manifest the latent elasticity of their walls; the measure of which elasticity being determined by the distance to which the cloud is expelled.

On the 29th May, 1879, I gathered about one hundred specimens of *Morchella gigas*, Pers., and laid them out separately upon boards in my study. In the evening, as the rays of the setting sun fell obliquely upon them, I observed that all the older specimens were quietly and continuously diffusing their sporidia. Each sporidium was distinctly visible to the naked eye, floating in the air, twisting and turning in the sunlight. The head of each of the morells in question was surrounded by a cloud of sporidia extending three or four inches above and around it. This cloud could only be seen in the oblique light against a dark background. When acted upon by a gentle current of air, such as would be produced by gently waving the hand, it swayed to and fro, without manifesting any tendency to become dispersed. The component sporidia were in constant motion, rising and falling, and circling about, as if the law of gravity was a myth existing only in the imagination of philosophers. When the cloud was blown quite away by a more powerful air-current, it in the course of a few seconds reformed. The contents of each ascus could be seen to be separately ejected in a minute jet, consisting of a limited number of sporidia, which speedily became lost with the others forming the cloud.

The phenomenon above described is interesting from a physiological point of view, as showing the capabilities of the unaided human eye. These sporidia measured only about one-hundredth of an inch in their long diameter, and five-one-thousandths of an

* Read at the meeting of the Woolhope Club, Oct 8th, 1880.

inch in their short—yet they could distinctly be seen to be bodies having length and breadth.

That the process above described is the normal mode in which the sporidia of the *Morchellæ* are diffused, and not the result of an accidental chain of circumstances, is further shown in another way. A lady, who has a particularly irritable skin, and who has often accompanied me in my mycological excursions, was never able to gather Morells without suffering from a very unpleasant erythema of the face, the explanation of which was never arrived at until the above observations were made, although experience had taught her that the Morells must always be kept at arm's-length.

What particularly struck me when observing these spores being given off, was the facility with which they floated in the air, having little or no tendency to subside. Their specific gravity must be very low, and this, aided by their gyrations, will account for the extensive and, when aided by air-currents, rapid diffusion of Elvellaceous sporidia.

DR. MINKS ON THE STRUCTURE OF LICHENS.

You have favoured me with a copy of No. 49 of "Grevillea," containing a paper on the letter which I published in the "Révue Mycol.," No. 7, for the French-speaking public, especially for the readers of that journal—a favour for which I thank you most sincerely.

The intention of Mr. Phillips has certainly deserved the acknowledgments of the English public, but they may decide with what success he has solved his theme.

In order to enable the readers to completely understand my rectification, the necessity of which appears both urgent and indispensable, I subjoin the following sketch:—

The three tissues of the body of lichens, the recently-discovered hyphema, the gonohyphema (formerly the hyphoidal system), and the gonidema, are not separated from each other by sharp limits; they are only modifications of a single anatomical principle, created for physiological and morphological ends. Each tissue contains in its cells at least one microgonidium. That not all the cells of these tissues, notwithstanding their including green corpuscles, appear green in the microscope image, reposes simply on optical conditions. The intensity of green colour of the gonidia does not depend, as Mr. Phillips inaccurately translated, on the microgonidia, but on the intensity of their colour, and much more on the number and arrangement of these corpuscles in each cell. That explains how, not only real hyphæ, but also true gonidia, with their products, can appear now colourless, now green. Mr. Phillips, after correctly translating my precise definition—that the microgonidium is the criterion of the cell of lichens in opposition

to that of fungi, that, consequently, no homogenousness of the hyphæ in both plants does exist, falls into that inconceivable contradiction of making me say that, as regards systematic botany, the *gonidia* are the criterion of the two great vegetable kingdoms.

According to my explication, if we shall be enabled to conceive a vegetable form as a lichenic one, we have not to prove the presence of gonidia in its body, but of microgonidia in its cells, we have to search for the hyphema, etc.; in short, to demonstrate that it is subject to quite other laws than the fungus, in its vegetative and reproductive life. In the whole train of argument, the criterion, consisting in the presence of the microgonidia, is the most simple and commodious, so that the very tyro or *dilettante* may be expected to make himself familiar with it. In future, at least, an examination of the cells of the fructification, paraphyses and thecæ, with their spores, must by all means take place.

Anticipating that the readers of my letter would have the well-done plates of my work before their eyes, I referred to them, especially to the last plate, under the firm conviction that a glance must inform any botanist a little acquainted with the structure of the concerned parts of what, in verbal translation I pronounced. It may be seen that the thecaspore cannot at all be the product of intracellular free formation,* for the microgonidia contained in all the cells of the fructifying parts are equally here in morphological activity, from the commencement to the end. The origination of the spores reposes on simple metamorphoses of cells of ready hyphæ containing microgonidia, and if no metamorphosis ensues, the hyphæ become and remain what is called paraphyses.

It was properly I, the discoverer and author, whom alone it might be allowed to give such a brief epitome—as it were, the quintescence of my work†—since its real tendency could and should be no other than to direct the attention of the French public to these novelties. Should the same end be reached among the English public, of course an uncurtailed translation of my letter ought to have been given, but still more, two anticipations ought to have been answered: that the reader of my French letter had also read all the publications in that journal on my lichenological discoveries, and that an understanding of my paper without a contemporary inspection of the figures of my work—the most important of which are even cited—is hardly to be obtained.

Mr. Phillips does not fulfil these anticipations—for he even neglects mentioning that my letter insists on them. With him I complain that the same space (insignificant as it is) which the "Révue Mycologique" has afforded, was not allowed for his important communication. Already my letter, reduced in your

* Mr. Phillips makes me say, that the thecaspore is *only* the product of free *intercellular* formation.

† "Das Microgonidium. Ein Beitrag zur Keuntniss des wahren Wesens der Flechten." Basle (H. Georg), 1879, with 6 col. plates.

journal nearly to one-third of its extent, could and should not pretend to make a satisfactory extract of my book, for which I published in "Flora," 1878, Nos. 14-20, a much more comprehensive treatise. But neither this restriction of the intention of the eminent English fungist, nor his consideration of the circumstance that I was "not writing in my native language, but more especially on account of my views being quite novel, and subversive of our preconceived notions of the morphology and physiology of lichens," seems to have caused him to fall into so striking an opposition to words of my paper. If with consideration of the narrow space, a reproduction of my paper should be given, in so much as it interests the fungists and the followers of the Schwendenerian doctrine, this end could be reached by uniting all the most essential passages into a uniform representation.

If we consider that the definition hitherto accepted of lichens, as it heads a well-known work of recent date, sounds "Plantæ cellulares thallo gonidiifero praeditæ sporasque libera generatione ortas in ascis foventes," and that the entire intention of my comprehensive work was to overthrow that definition, a solemn protestation from my part against the statements ascribed to me will appear well justified. One will even wonder how to Mr. Phillips my new facts could appear as very theories, after he had raised the suspicion that I had stated such wanton utopias.

The English public will finally partake of my conviction that a detailed exposition of my new doctrine in English is now still more urgently required, and lend their assistance to its apparition in every way, for which purpose I recommend to translate the paper published in "Flora" 1878, l.c., under omission of the concluding words and certain notes. As such a translation would extraordinarily gain by the citation of figures of my exhaustive work, I declare myself ready for promoting its execution.

Beseeching you to print the above lines in the next number of your journal, I remain, sir, yours most respectfully,

Dr. A. Minks.

P.S.—I am hoping that my paper will not contain thus much errata as that of Mr. Phillips.

Note on the Above, by W. Phillips.

I strongly disclaim any intention of misrepresenting the opinions of Dr. Minks in the brief abstract of his paper, of which he complains, and I am glad that he undertakes to correct any errors into which I might have fallen, as there is nothing more to be wished than a clear exposition of his theories. I trust, however, that your readers will derive more light from his communication above than I am able to do.

Please to correct the following typographical errors in my abstract:—Page 34, line 13 from the top, for "plates given them," read "plates given there." Page 35, line 12 from top, for "microgonidia maintained," read "microgonidia maintain." Page 36, line 1, for "hyptra," read "hypha;" line 16 from bottom, for "Mallus," read "thallus." Page 37, line 1, for "mecaspore," read "thecaspore;" line 5 from top, for "mecaspore," read "thecaspore;" line 9 from top, for "meci," read "theci."

INDEX TO BRITISH FUNGI DESCRIBED OR NOTICED IN "GREVILLEA." VOLS. I.—VIII.

By Greenwood Pim, M.A., F.L.S.

In presenting to the readers of "Grevillea" the accompanying Index to the British Fungi in the first eight volumes of that serial, the compiler believes he is, to some extent at least, supplying a want that has been felt by almost all students of our Mycologic Flora.

It is now some twelve years since Dr. Cooke's "Handbook" appeared, and since that time the records of new species have been so very numerous as to make it no easy matter to turn at a moment's notice to the exact page and number of "Grevillea." in which such additions are to be found, forming as they do no small or unimportant portion of its contents. In a few cases where a species is noticed a second time and merely referring to a former notice, it has been indexed only once, viz., the first occurrence.

In compiling such an Index, it is no easy matter to eliminate every error, especially where the amount of time available has been limited and irregular; it is hoped, however, that the errors are few and unimportant, and that this list may serve, in some sort, as a concise record of the progress of British Mycology till a second edition of the "Handbook" is given to the public.

COED COCH AND COLWYN FUNGI.

By invitation of Mrs. Lloyd Wynne and Mr. A. O. Walker, a party of mycologists visited these localities for two or three days, from the 9th October; and the following list includes the majority of species found during the excursions. Others have been collected since by the Rev. M. J. Berkeley, of which a special record will probably be given by that gentleman. As no extensive list of the North Wales Fungi has been published, we give the list in its entirety, although it represents only the result of two or three consecutive days, and must therefore be regarded as fragmentary.

AGARICUS.

acerbus, *Bull.*
acicula, *Sch.*
æruginosus, *Curt.*
albus, *Fr.*
alcalinus, *Fr.*
arvensis, *Schff.*
bifrons, *B. & Br.*
Bloxami, *B. & Br.*
brevipes, *Bull.*
brumalis, *Fr.*
butyraceus, *Bull.*
campestris, *L.*
capnoides, *Fr.*
cervinus, *Sch.*

AGARICUS.

chalybeus, *P.*
cinerascens, *Bull.*
clavipes, *Fr.*
columbetta, *Fr.*
carcharias, *P.*
confluens, *P.*
corrugis, *P.*
cristatus, *Fr.*
cucumis, *P.*
epipterygius, *Scop.*
equestris, *L.*
euthelus, *B. & Br.*
excelsus, *Fr.*
fascicularis, *Huds.*

AGARICUS.
fastibilis, *Fr.*
fibula, *Bull.*
flaccidus, *Sow.*
flavidus, *Sch.*
fœnisecii, *P.*
fragrans, *Sow.*
galopus, *Schr.*
geophyllus, *Sow.*
giganteus, *Fr.*
gracilis, *Fr.*
grammopodius, *Bull.*
granulosus, *Batsch.*
hypnorum, *Batsch.*
inamœnus, *Fr.*
infundibuliformis, *Sch.*
inopus, *Fr.*
jubatus, *Fr.*
laccatus, *Scop.*
lenticularis, *Lash.*
longicaudus, *P.*
Mappa, *Batsch.*
mélleus, *Vahl.*
mitis, *B.*
mollis, *Sch.*
mutabilis, *Sch.*
nebularis, *Batsch.*
nidorosus, *Fr.*
nudipes, *Fr.*
odorus, *Bull.*
parabolicus, *A. & S.*
pascuus, *P.*
phalloides, *Fr.*
phyllophilus, *Fr.*
prunulus, *Scop.*
purus, *P.*
pyriodorus, *P.*
rachodes, *Vitt.*
radicatus, *Relh.*
radicosus, *Bull.*
resplendens, *Fr.*
rimosus, *Bull.*
rosellus, *P.*
rubescens, *P.*
rugosus, *Fr.*
rutilans, *Schff.*
sanguinolentus, *A. & S.*
saponaceus, *Fr.*
semiglobatus, *Batsch.*
semilanceatus, *Fr.*
senilis, *Fr.*

AGARICUS.
separatus, *L.*
spadiceus, *Sch.*
spectabilis, *Fr.*
sulfureus, *Bull.*
tener, *Sch.*
tenerrimus, *B.*
terreus, *Sch.*
tuberosus, *Bull.*
tumidus, *Fr.*
vaccinus, *P.*
velutipes, *Curt.*
vulgaris, *P.*

COPRINUS.
comatus, *Fr.*
micaceus, *Fr.*
plicatilis, *Fr.*

BOLBITIUS.
fragilis, *Fr.*

CORTINARIUS.
anomalus, *Fr.*
cinnamomeus, *Fr.*
Cookei, *Quel.*
diabolicus, *Fr.*
elatior, *Fr.*
hinnuleus, *Fr.*
ochroleucus, *Fr*
purpurascens, *Fr.*

GOMPHIDIUS.
roseus, *Krom.*

HYGROPHORUS.
conicus, *Fr.*
hypothejus, *Fr.*
miniatus, *Fr.*
psittacinus, *Fr.*
virgineus, *Fr.*
Wynneæ, *B. & Br.*

LACTARIUS.
circellatus, *Fr.*
controversus, *P.*
deliciosus, *Fr.*
pyrogalus, *Fr.*
rufus, *Fr.*
serifluus, *Fr.*
subdulcis, *Fr.*
torminosus, *Fr.*
vellereus, *Fr.*
,, *var.* exsuccus, *Sm.*

RUSSULA.
cyanoxantha, *Fr.*
emetica, *Fr.*

RUSSULA.
fellea, *Fr.*
fragilis, *Fr.*
heterophylla, *Fr.*
integra, *Fr.*
nigricans, *Fr.*
Queletii, *Fr.*
rubra, *Fr.*
subfætens, *Sm.*
CANTHARELLUS.
aurantiacus, *Fr.*
cibarius, *Fr.*
MARASMIUS.
androsaceus, *Fr.*
epiphyllus, *Fr.*
erythropus, *Fr.*
Hudsoni, *Fr.*
oreades, *Fr.*
peronatus, *Fr.*
BOLETUS.
bovinus, *L.*
chrysenteron, *Fr.*
edulis, *Bull.*
elegans, *Schum.*
felleus, *Bull.*
laricinus, *B.*
luteus, *L.*
pachypus, *Fr.*
subtomentosus, *Fr.*
POLYPORUS.
adustus, *Fr.*
aneirinus, *Fr.*
annosus, *Fr.*
fragilis, *Fr.*
molluscus, *Fr.*
picipes, *Fr.*
rufescens, *Fr.*
squamosus, *Fr.*
vaporarius, *Fr.*
versicolor, *Fr.*
vulgaris, *Fr.*
DÆDALEA.
quercina, *P.*
FISTULINA.
hepatica, *Fr.*
MERULIUS.
corium, *Fr.*
pallens, *B.*
HYDNUM.
ochraceum, *Fr.*
repandum, *Fr.*
HYDNUM.
udum, *Fr.*
RADULUM.
orbiculare, *Fr.*
GRADINIA.
granulosa, *Fr.*
CRATERELLUS.
crispus, *Fr.*
THELEPHORA.
caryophyllea, *Fr.*
laciniata, *Fr.*
STEREUM.
acerinum, *Fr.*
purpureum, *Fr.*
rugosum, *Fr.*
spadiceum, *Fr.*
CORTICIUM.
arachnoideum, *B. & Br.*
comedens, *Fr.*
giganteum, *Fr.*
incarnatum, *Fr.*
læve, *Fr.*
punctulatum, *Cke.*
sambuci, *Fr.*
PENIOPHORA.
cinerea, *Fr.*
quercina, *P.*
rimosa, *Cke.* n.s.
velutina, *Fr.*
CYPHELLA.
villosa, *P.*
CLAVARIA.
coralloides, *L.*
inæqualis, *Mull.*
rugosa, *Bull.*
CALOCERA.
viscosa, *Fr.*
PISTILLARIA.
quisquilaris, *Fr.*
TREMELLA.
albida, *Huds.*
mesenterica, *Retz.*
HIRNEOLA.
auricula-Judaæ, *Fr.*
NÆMATELIA.
encephala, *Fr.*
DACRYMYCES.
stillatus, *Nees.*
deliquescens, *Dub.*
SCLERODERMA.
bovista, *Fr.*

PHALLUS.
impudicus, *L.*
LYCOPERDON.
saccatum, *Vahl.*
gemmatum, *Fr.*
pyriforme, *Schff.*
STEMONITIS.
fusca, *Roth.*
TILMADOCHE.
nutans, *R.*
CHONDRIODERMA.
floriforme, *R.*
ARCYRIA.
punicea, *P.*
TRICHIA.
chrysosperma, *D.C.*
TUBULINA.
cylindrica, *Bull.*
CYATHUS.
striatus, *Hoffm.*
CRUCIBULUM.
vulgare, *Tul.*
PHRAGMIDIUM.
bulbosum, *Schl.*
COLEOSPORIUM.
tussilaginis, *Lev.*
ÆCIDIUM.
tussilaginis, *P.*
RHINOTRICHUM.
repens, *Preuss.*
POLYACTIS.
cinerea, *Lk.*
ZYGODESMUS.
fuscus, *Ca.*
ÆGERITA.
candida, *P.*
ERYSIPHE.
horridula, *Lev.*
Martii, *Lk.*
LEOTIA.
lubrica, *P.*
PEZIZA.
badia, *P.*
calycina, *Schum.*
cinerea, *Batsch.*
cyathoidea, *Bull.*
Dalmeniensis, *Cke.*
firma, *P.*
leporina, *Batsch.*
scutellata, *L.*
stereicola, *Cke.*
PEZIZA.
succosa, *B.*
umbrorum, *Fckl.*
vinosa, *A. & S.*
virginea, *Batsch.*
vulgaris, *Fr.*
HELOTIUM.
aciculare, *Fr.*
æruginosum, *Fr.*
claro-flavum, *Grev.*
pruinosum, *Jerd.*
virgultorum, *Fr.*
BULGARIA.
sarcoides, *Fr.*
RHYTISMA.
acerinum, *Fr.*
NECTRIA.
cinnabarina, *Tode.*
Ralfsii *B. & Br.*
mammoidea, *P. & P.*
sinopica, *Fr.*
HYPOCREA.
rufa, *Fr.*
HYPOMYCES.
aureo-nitens, *Tul.*
chrysospermus, *Tul.*
rosellus, *Tul.*
XYLARIA.
hypoxylon, *Grev.*
HYPOXYLON.
coccineum, *Bull.*
confluens, *Tode.*
rubiginosum, *Fr.*
serpens, *Fr.*
DIATRYPE.
disciformis, *Fr.*
ferruginea, *Fr.*
nucleata, *Curr.*
quercina, *Fr.*
stigma, *Fr.*
DOTHIDEA.
graminis, *P.*
pteridis, *Fr.*
EUTYPA.
Acharii, *Tul.*
flavo virens, *Tul.*
lata, *Tul.*
VALSA.
ambiens, *Fr.*
stellulata, *Fr.*

Sphæria.
acuminata, *Sow.*
aquila, *Fr.*
innumera, *B. & Br.*
inquilina, *Fr.*

Sphæria.
ovina, *P.*
phæostroma, *Mont.*
pæcilostoma, *B. & Br.*

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

CALIFORNIAN FUNGI.

By M. C. Cooke and Dr. W. H. Harkness.

(Continued from page 9.)

The following completes the list of undescribed species contained in the collection made by Dr. W. H. Harkness in California during 1880. Although a large number of the species now described belong to the category of imperfect fungi, they cannot be entirely ignored on that account.

Corticium pactolinum, *Cke. & Hark.*

Aureo-flavum, effusum, crustaceum, indeterminatum, hymenio lævi, glabro, friabili, demum fissurato. Sporis globosis ((·007-·008 mm. diam.), lævibus, pallide flavibus.

On naked wood of *Quercus.* (No. 1521.)

A singular species, of a brilliant golden yellow, the surface a compact mass of globose spores. The hymenium becomes cracked in drying, and falls away in irregular fragments.

Macroplodia asterina, *Cke. & Hk.*

Hypophylla. Maculis radiato-fibrosis, suborbicularibus, atris; peritheciis subglobosis, aggregatis, inter hyphis nidulantibus. Sporis ovalibus, fuscis (·006 × ·0035 mm.).

On leaves of Madröno (*Arbutus Menziesii*). (1317.)

Macroplodia ovalis, *Cke. & Hk.*

Peritheciis atris, globosis, semi-liberis, in plagas elongatas collectis. Sporis pallido-fuscis, ovalibus, continuis (·005 × ·004 mm.).

On Locust twigs. (1589.)

Phoma pini, *Cke. & Hk.*

Sparsa, tecta. Peritheciis minimis, subglobosis, cryptis. Sporis ellipticis, hyalinis, continuis (·0065 × ·003 mm.).

On bark of *Coniferæ.* (1548.)

Scarcely visible, except by slight cracking of the cuticle.

Phoma capsularum, *Cke. & Hk.*
Erumpens. Peritheciis atris, nitidis, in maculas orbicularibus congestis. Sporis ellipticis, hyalinis, continuis (·0065 × ·0025-·0028 mm.).
On legumes of *Robinia.* (1448.)

Phoma Eucalypti, *Cke. & Hk.*
Erumpens, gregaria. Peritheciis atris, semiliberis, maculas punctatas formantibus. Sporis elongato-ellipticis, hyalinis, continuis (·01-·012 × ·0028 mm.).
On inner bark of *Eucalyptus globulus.* (1476.)

Phoma librincola, *Cke. & Hk.*
Exigua, gregaria, inter fibrillas nidulans. Peritheciis globosis, numerosis, atris. Sporis ellipsoideis, continuis, hyalinis (·008-·009 × ·004 mm.).
On liber of *Acacia.* (1444.)
Spreading over a considerable surface, imparting a rough appearance.

Phoma xylostei, *Cke. & Hk.*
Sparsa, punctiformis. Peritheciis atris, subprominulis. Sporis ellipticis, continuis, hyalinis (·006 + ·003 mm.).
On twigs of *Lonicera hispidula.* (1551.)

Hypocenia herbarum, *Cke. & Hk.*
Caulicola, erumpens. Peritheciis atris, obtusis, in lineas dispositis. Sporis subclavatis, hyalinis, bi-trinucleatis, demum univel biseptatis (·018 × ·0035 mm.).
On stems of *Aster.* (1373.)
The habit is that of many species of *Diaporthe,* of which it may be a condition.

Sphæropsis maculæforme, *Cke. & Hk.*
Epiphyllum. Peritheciis exiguis, atris, subnitidis, in maculas orbicularibus congestis. Sporis cylindricis, utrinque obtusis, hyalinis, continuis (·015 × ·0035 mm.).
On leaves of Madröno *Arbutus Menziesii.* (1318.)

Sphæropsis amenti, *Cke. & Hk.*
Peritheciis minimis, membranaceis, sparsis, convexis, brunneis. Sporis ellipticis, hyalinis, continuis (·01 × ·005 mm.).
On catkins of *Alnus.* (1375.)

Diplodia Lupini, *Cke. & Hk.*
Sparsa. Peritheciis atris, globosis, semiliberis. Sporis ellipticis, utrinque subattenuatis, uniseptatis, medio constrictis, brunneis, cellulis subtriquetris (·028 × ·01 mm.).
On Lupin stems. (1308.)

Diplodia sedicola, *Cke. & Hk.*
Sparsa, prominula, erumpens. Peritheciis subglobosis, atris. Sporis ellipticis, uniseptatis, brunneis, medio nec constrictis (·02 × ·0085 mm.).
On *Sedum.* (1408.)

Diplodia cyparissa, *Cke. & Hk.*
Sparsa, tecta, epidermide elevata. Peritheciis subglobosis, demum depressis. Sporis ellipticis, hyalinis, continuis, demum uniseptatis, brunneis, medio vix constrictis (·02-·022 × ·009 mm.).
On *Cupressus macrocarpus.* (1269, 1270.)

Diplodia symphoricarpi, *Cke. & Hk.*
Sparsa, tecta, vix visibilis. Peritheciis depressis, sub cuticulâ nidulantibus. Sporis ellipticis, uniseptatis, fuscis, medio fortissime constrictis, cellulis subglobosis (·022-·024 × ·011-·012 mm.).
On *Symphoricarpus.* (1361.)

Diplodia extensa, *Cke. & Hk.*
Gregaria. Peritheciis subglobosis, atris, sub cuticulâ nigrofactâ nidulantibus. Sporis ellipticis, uniseptatis, brunneis, medio constrictis (·028 × ·013 mm.).
On *Acer macrophyllum.* (1492.)

Diplodia phyllodiæ, *Cke. & Hk.*
Sparsa. Peritheciis subglobosis, atris, prominulis, superne nudis. Sporis elongato-ellipticis, uniseptatis, brunneis, medio nec constrictis (·022-·025 × ·009 mm.).
On phyllodia of *Acacia.* (1251.)

Diplodia laurina, *Cke. & Hk.*
Epiphylla, sparsa, punctiformis. Peritheciis convexis, atro-brunneis. Sporis ellipticis, uniseptatis, fuscis (·01-·012 × ·004 mm.).
On Laurel leaves. (1302.)

Diplodia maculata, *Cke. & Hk.*
Epiphylla. Maculis irregularibus, fuliginosis, fusco-marginatis. Peritheciis applanatis, membranaceis, brunneis. Sporis ellipticis, pallido fuscis, uniseptatis (·02 × ·005 mm.).
On living leaves of Madröno. (1316.)

Diplodia periglandis, *Cke. & Hk.*
Erumpens. Peritheciis globosis, atris, demum subliberis. Sporis ellipticis, uniseptatis, hyalinis, medio nec constrictis (·015 × ·004 mm.).
On acorns. (1433.)

Dichomera viticola, *Cke. & Hk.*
Sparsa, erumpens. Peritheciis atris, subglobosis, prominulis. Sporis subglobosis, septatis, cellulâ alterâ transverse divisis, fuscis (·008 × ·006 mm.).
On wild grapevine. (1489.)
Spores sometimes globose, sometimes a little elongated, usually with one septum, each or one of the cells being transversely divided.

Dichomera rhuina, *Cke. & Hk.*
Sparsa. Peritheciis subglobosis, atris, demum denudatis, obtusis. Sporis ellipticis, triseptatis, cellulis uno alterove transverse divisis, fuscis (·02 × ·008 mm.).
On *Rhus triloba.* (1327.)

Hendersonia Lupini, *Cke. & Hk.*
Sparsa, erumpens. Peritheciis subglobosis, prominulis, atris, obtusis. Sporis arcte ellipticis, hyalinis, demum fuscis, triseptatis (·016-·018 × ·0035 mm.).
On *Lupinus.* (1431.)

Ceuthospora brevispora, *Cke. & Hk.*
Epiphylla. Peritheciis applanatis, in lacinias parvulas dehiscentibus. Nucleo subæruginoso. Sporis cylindricis, obtusis, hyalinis, continuis (·01-·014 × ·003 mm.).
On *Heteromeles arbutifolia.* (1296 bis.)

Cryptosporium eucalypti, *Cke. & Hk.*
Sparsum, punctiforme, epidermide tectum. Sporis fusoideis, abrupte curvulis, hyalinis (·02 × ·0035 mm.).
On twigs of *Eucalyptus globulus.* (1286.)

Cryptosporium punctiforme, *Cke. & Hk.*
Epiphyllum, sparsum, exiguum, punctiforme, habitu *Sphærellæ punctiformis.* Sporis leniter curvulis, utrinque attenuatis, hyalinis (·02-·092 × ·022 mm.).
On leaves of *Arbutus Menziesii.* (1317.)

Cryptosporium falcatum, *Cke. & Hk.*
Hypophyllum vel amphigenum, punctiforme, in plagas nebulosas aggregatum. Sporophoris elongatis, falcatis. Sporis utrinque attenuatis, hyalinis, leniter curvulis (·02-·023 × ·002 mm.).
On leaves of *Arctostaphylos.* (1470, 1372.)
Similar to the last, but with the spores produced at the apex and on one side of long falcate sporophores. Perithecia more densely aggregated.

Asteroma Dianthi, *Cke. & Hk.*
Maculis irregularibus, cinereis. Peritheciis convexis, hyphis tenuibus fuscis radiantibus. Sporis minimis, hyalinis, ellipticis (·005-·006 × ·002 mm.).
On stems and leaves of *Dianthus.* (1451.)

Phyllosticta innumera, *Cke. & Hk.*
Hypophylla. Peritheciis exiguis, aliis in maculas orbicularibus dispositis, aliis in plagas maximas gregariis. Sporis ellipticis, hyalinis, continuis (·0045 × ·002 mm.).
On living leaves. (1184.)

Phyllosticta Garryæ, *Cke. & Hk.*
Epiphylla. Maculis ellipticis, griseis, purpureo-cinctis. Peritheciis convexis, prominulis, atris, sub-nitidis. Sporis arcte ellipticis, hyalinis, continuis (·01-·012 × ·002-·0025 mm.).
On *Garrya elliptica.* (1294.)

Phyllosticta heteromeles, *Cke. & Hk.*
Epiphylla. Maculis pallidis, orbicularibus vel confluentibus, nigro-limitatis. Peritheciis convexis, atris. Sporis ellipticis, hyalinis, continuis (·008 × ·002 mm.).
On leaves of *Heteromeles.* (1296.)

Sporidesmium fumago, *Cke.*, var. **umbrinum.**

In this variety the general colour is umber brown; otherwise it scarcely differs from the common form, which is probably only a condition of some *Capnodium.*

On twigs and leaves of *Arctostaphylos.* (1485.)

Helicoma fasciculatum, *Berk. & Curt. in U.S. Exp. Exp.*

A very interesting species only previously found in Japan.

On *Laurus* leaves. (1508.)

HARKNESSIA, *Cke.*

Perithecia vera nulla. Sporæ ellipticæ vel subglobosæ, simplicia, opaca, deorsum pedicula hyalina producta, in nucleum conglutinata, demum in cirrhos atros erumpentia.

Allied probably to *Melanconium.*

Harknessia eucalypti, *Cke.*

Epiphylla, vel caulina. Sporis late ellipticis, atro-fuscis (·03 × ·015 mm.) deorsum pedicellatis. Pedicellis æqualibus linearibus, hyalinis (·04 mm. long). Orificio orbiculari, margine elevato, hinillic dentato-lacerato.

On leaves and twigs of *Eucalyptus globulus.* (1280.)

This curious fungus seems to be related to *Melanconium.* The spores resemble most those of an *Uromyces*, but they are ejected in thick black tendrils, immersed in gelatin, and do not become pulverulent. There is no proper perithecium, and the tendrils issue from orbicular openings, the margins of which are elevated into a kind of collar, and remain after the spores are dispersed, and then not unlike some *Stictis.* Chiefly found on the dead leaves, but also scattered over the young twigs. Its development requires to be studied in living specimens, and as its host, *Eucalyptus globulus*, is becoming widely distributed, this parasite should be sought after, and its life-history investigated.

Diatrype eucalypti, *Cke. & Hk.*

Suborbic ularis, convexa, nigra, ostiolis conicis, sulcatis. Ascis clavatis, longe stipitatis. Sporidiis leniter curvulis, utrinque obtusis, hyalinis (·01 × ·0015 mm.).

On branches of *Eucalyptus globulus.* (1419.)

Diatrype prominens, *Cke. & Hk.*

Erumpens, oblonga, convexa, nigra, elevata. Ostiolis prominulis, sulcatis. Ascis clavatis, sessilibus. Sporidiis leniter curvulis, utrinque obtusis, hyalinis (·012-·013 × ·002 mm.).

On twigs of *Mimulus* and *Arbutus Menziesii.* (1321, 1580, 1581, 1583.)

Valsa eucalypti, *Cke. & Hk.*

Erumpens, subrotunda, convexa, nigra. Peritheciis oblongis. Ostiolis elongatis, cylindricis, lævibus, rectis. Ascis clavatis, sessilibus. Sporidiis rectis vel leniter curvulis, utrinque obtusis, hyalinis (·008-·009 × ·0015 mm.).

On twigs of *Eucalyptus globulus.* (1287a.)

Pustules small, consisting of five or six perithecia.

Diaporthe phaceliæ, *Cke. & Hk.*

Sub-effusa, stroma sub corticum nigricans. Peritheciis subglobosis, immersis. Ostiolis cylindricis, elongatis, flexuosis. Ascis clavatis, sessilibus, sporidiis rectis, sublanceolatis, quadri-nucleatis, dein uniseptatis (·015 × ·003 mm.).

On branches of *Phacelia.* (1347.)

Diaporthe æsculi, *Cke & Hk.*

Corticalis, in plagas elongatas collecta. Peritheciis globoso-depressis. Ascis lanceolatis, sessilibus. Sporidiis sub-lanceolatis, rectis, quadrinucleatis (·018 × ·0035 mm.).

On *Æsculus californica.* (1463.)

Sphæria anisometra, *Cke. & Hk.*

Sparsa, erumpens. Peritheciis hemispherico-prominulis, obtusis, atris, primo epidermide tectis, demum superne nudis. Ascis clavatis, sessilibus. Sporidiis biseriatis, sublanceolatis, utrinque rotundatis 1-4 septatis, cellulâ penultimâ incrassatâ, hyalinis (·026 × ·008 mm.).

On twigs of *Mimulus glutinosus* (1445); on *Lonicera involucrata* (1499); on *Cupressus macrocarpus* (1439); on *Eucalyptus globulus* (1287); on *Rubus* (1486, 1262); on *Dracæna* (1447); and on legumes of *Robinia* (1237).

The sporidia are at length unequally divided, the upper portion being the shortest, and consisting of two cells. of which the second is broadest, the lower portion consisting of three nearly equal cells. The broad cell only usually nucleate.

Sphæria acuum, *Cke. & Hk.*

Erumpens, hemispherico-prominula. Peritheciis atris, vix papillatis. Ascis clavatis. Sporidiis biseriatis, sub-lanceolatis, utrinque rotundatis, medio constrictis, 1-3 septatis, quandoque quadriseptatis, hyalinis (·023-·024 × ·006 mm.).

On fir leaves. (1349.)

Closely allied to *Sphæria anisometra, C. & H.*

Pleospora vitrispora, *Cke. & Hk.*

Sparsa, epidermide nigrofactâ tecta. Peritheciis globosis, papillatis, atris. Ascis cylindricis. Sporidiis elongato-ellipticis, utrinque leniter attenuatis, merenchymaticis, hyalinis (·032 × ·012 mm.).

On *Lonicera.* (1311.)

Sphærella (?) Hosackiæ, *Cke. & Hk.*

Sparsa, tecta, punctiformis. Peritheciis globoso-depressis. Ascis clavatis, sessilibus. Sporidiis (16?) numerosis, ellipticis, continuis, hyalinis (·006 × ·0025 mm.).

On twigs of *Hosackia.* (1395.)

Sphærella dryophila, *Cke. & Hk.*

Epiphylla. Maculis orbicularibus, rubro-brunneis. Peritheciis brunneis, subimmersis. Ascis clavatis, sessilibus; sporidiis lanceolatis, triseptatis, pallide fuscis (·02 × ·0035-·004 mm.).

On leaves of *Quercus.* (1471.)

Gibbera ficini, *Cke. & Hk.*

Cæspitosa, atro-violacea. Peritheciis stipatis, lævibus, vix papillatis. Stylo-sporis lanceolatis, obtusis, curvulis, triseptatis, hyalinis (·03 × ·008 mm.).

On bark of *Ficus.* (1472.)

Asci and sporidia not seen. Stylospores evidently different from those of *G. pulicaris.*

Dothidea sequoiæ, *Cke. & Hk.*

Foliicola, sparsa, convexa, atra, nitida, minuta, unicellulata. Ascis late clavatis, sessilibus. Sporidiis biseriatis, lanceolatis, obtusis, medio constrictis, uniseptatis, binucleatis, hyalinis (·023 × ·0075 mm.).

On leaves of *Cupressus.* (1182.)

Dothidea rugodisca, *Cke. & Hk.*

Hypophylla. Maculis irregularibus, fuscis. Peritheciis angulatis, applanatis, rugosis, congestis. Ascis subclavatis. Sporidiis supra rotundatis, infra attenuatis, triseptatis, hyalinis (·016-·017 × ·004 mm.).

On leaves of *Arbutus Menziesii.* (1528.)

Dothidea corylina, *Cke. & Hk.*

Erumpens, orbicularis, depressa, atra, intus concolor. Ascis amplis, clavatis. Sporidiis obtuse lanceolatis, medio constrictis, 1-3 septatis, fuscis (·05 × ·015 mm.).

On twigs of *Corylus rostrata.* (1381, 1383.)

Asterina anomala, *Cke. & Hk.*

Effusa, atra, velutina. Peritheciis hemisphericis, vel globoso-depressis ; mycelio intricato fusco nidulantibus; hinc illic setis rigidis erectis inspersis. Ascis clavatis. Sporidiis biseriatis, lanceolatis, 1-5 septatis, hyalinis (·02-·022 × ·004 mm.).

On living laurel leaves. (1461.)

A singular species. Sometimes setæ are also found on the perithecia, which then have somewhat the appearance of a miniature *Meliola.* Perithecia only ·08 mm. in diameter, the setæ about twice as long.

REVUE MYCOLOGIQUE.

We have been solicited to draw attention to the continued publication of this Journal, and the varied amount of information it contains. We are glad to recognise all efforts to diffuse mycological knowledge and illustrations of mycological subjects. *Apropos* of this we commend to the notice of all connoisseurs in iconography the recent illustrations of the Journal in question, specially the figure No. 2 of plate X, which is said to represent *Peronospora viticola.* This figure is hardly like the genuine American *Peronospora* with which we are acquainted. It certainly must have degenerated since its visit to Europe, if *this* be a genuine portrait.

ILLUSTRATIONS OF BRITISH FUNGI.

For obvious reasons, our remarks on this head will be confined to a statement of facts.

During the last Fungi meeting of the Woolhope Club the subject of conversation, on one or two occasions, was the desirability of publishing at a reasonable price, and with as much expedition as possible, a series of coloured figures of the larger British Fungi, that is, of the Hymenomycetes. As a consequence such a work has now been commenced, and it remains with the mycologists of this country to determine whether it shall be continued with vigour or not. All particulars as to price, &c., will be found in the advertisement.

It has been proposed that these "Illustrations" should be of uniform size with the plates of this journal. That each part shall consist of sixteen 8vo. coloured plates, and that four parts shall, if possible, be issued during the year. No letter press will accompany the plates, but this will be compensated by the issue of a second edition of the first part of the "Handbook," uniform in size, which will be undertaken as soon as circumstances may warrant.

The plates will represent the objects of a natural size whenever possible, but when reduced the scale of reduction will be named on the plate. In the same manner when enlarged the magnification will be stated. As far as possible an uniform scale of 420 diameters will be adopted for the spaces.

The plates will be numbered consecutively as published, but they will *not* be stitched, so that any one may place them in systematic order as the publication proceeds.

It would hardly have been possible to have issued such a series of figures in systematic order, and this will not be attempted, but whenever more than one species is figured on a plate, these will be closely consecutive species, so as not to interfere with a subsequent arrangement in accordance with the proposed "Handbook." An effort will be made to give figures of *all* the species included in the British Flora, as far as the end of the Hymenomycetes.

Co-operation will materially lessen the difficulties of the undertaking, which involves a serious amount of labour and expense. Only a limited number of copies will be printed, and those who are willing to encourage the work should send their names at once that they may receive their copies at the reduced subscription price. When the number of *two hundred* subscribers is completed the subscription list will be closed, and copies can only be obtained without any reduction in price. The principle of subscription is adopted only as a guarantee against the major cost of production, and its advantages are offered to those who are desirous of rendering that aid.

The first part is already published, and the second is in preparation. From these an opinion may be formed as to the execution

and merit of the work. The attempt is an ambitious one, and it is sincerely hoped that it may not fail for lack of that small support which it seeks. Further particulars may be obtained from the Editor of this Journal.

NOTES ON BRITISH DESMIDS.

By M. C. Cooke.

The most unique and interesting collection of Desmids made by Mr. A. W. Wills, in the neighbourhood of Capel Curig, during 1880, renders some observations essential as a supplement to our list in "Grevillea," vol. viii., p. 121.

In so far as the forms have yet been identified, this gathering contained no less than nearly ninety species, some of them new to the "British Flora," and many of them rare.

Before commencing these observations, it will be necessary to give some explanation of our Plate 141. It will be remembered that in 1859 the Rev. R. V. Dixon proposed ("Nat. Sci. Rev.," vi., p. 464) a new genus, under the name of *Tetrachastrum* for such species of *Micrasterias* as were allied to *M. oscitans*, and described a new species under the name of *Tetrachastrum mucronatum*, of which our Pl. 141, fig. 2 *a* is the typical form, or very nearly so. It was contended that this was a species quite distinct from *Tetrachastrum oscitans*, of which our fig. 2 *f* is a typical form. Having examined a collection made by Mr. A. W. Wills, in the neighbourhood of Birmingham, and a gathering from near Salisbury, we have found almost every intermediate gradation between these two extremes. So variable was the contour in the Birmingham gathering that no two individuals agree entirely with each other. From a large number of tracings by camera lucida we have selected only a few which are reproduced at Pl. 141, fig. 2 to illustrate our view that there is in reality no specific difference. Fig. *e*, which was in company with fig. *a*, is more closely related to fig. *f*, which is *T. oscitans*, than to fig. *a*, which is *T. mucronatum*. Hence we regard all as forms of the same variable species. As to the genus *Tetrachastrum*, let each be persuaded in his own mind; for ourselves we do not recognize any very strong argument in its favour.

Returning now to the Capel Curig gathering, we have to note the occurrence of *Sphærozosma* (*Spondylosium*) *pulchellum*, Archer, a species hitherto only found in Ireland.

Of the species of *Euastrum* only one calls for special mention, and that approximates so closely to *Euastrum erosum*, Lund., that we do not hesitate to consider it a form of that species. Nothing can be more accurate and characteristic than the figures of Lundell, and we feel confidence in trusting to them, although in this instance we have seen no authentic specimen.

The genus *Cosmarium* is one in which great care is necessary in the discrimination of species, but of the following we entertain no doubt.

Cosmarium pseudoconnatum, *Nordst.* (Pl. 140, fig. *h*).
Smaller than any form of *Cos. connatum.* In size it agrees completely with Nordstedt's measurements. It was only recorded previously in Ireland.

Cosmarium pseudonitidulum, *Nordst.*
Not previously recorded in the British Isles.

Cosmarium tetrachondrum, *Lund.*
Only found previously in Ireland.

Cosmarium cyclicum, *Lund.*
Of which varieties have been recorded in Scotland and Ireland.

Cosmarium variolatum, *Lund.*
Recorded in Ireland only, but not uncommon at Capel Curig.

Cosmarium Nymannianum, *Grunow.*
Previously recorded in Ireland.

Cosmarium truncatellum, *Perty.*
A minute species only found hitherto in Ireland.

Cosmarium Holmiense, *Lund.*
Not before recorded, except in Ireland, but now found in England, as well as North Wales.

Cosmarium quadrum, *Lund.*
The quincunx arrangement of the nodules is one feature in which this species differs from *C. conspersum.* Not previously recorded in the British Islands.

Cosmarium galeritum, *Nordst.*
Not previously recorded in Britain or Ireland.

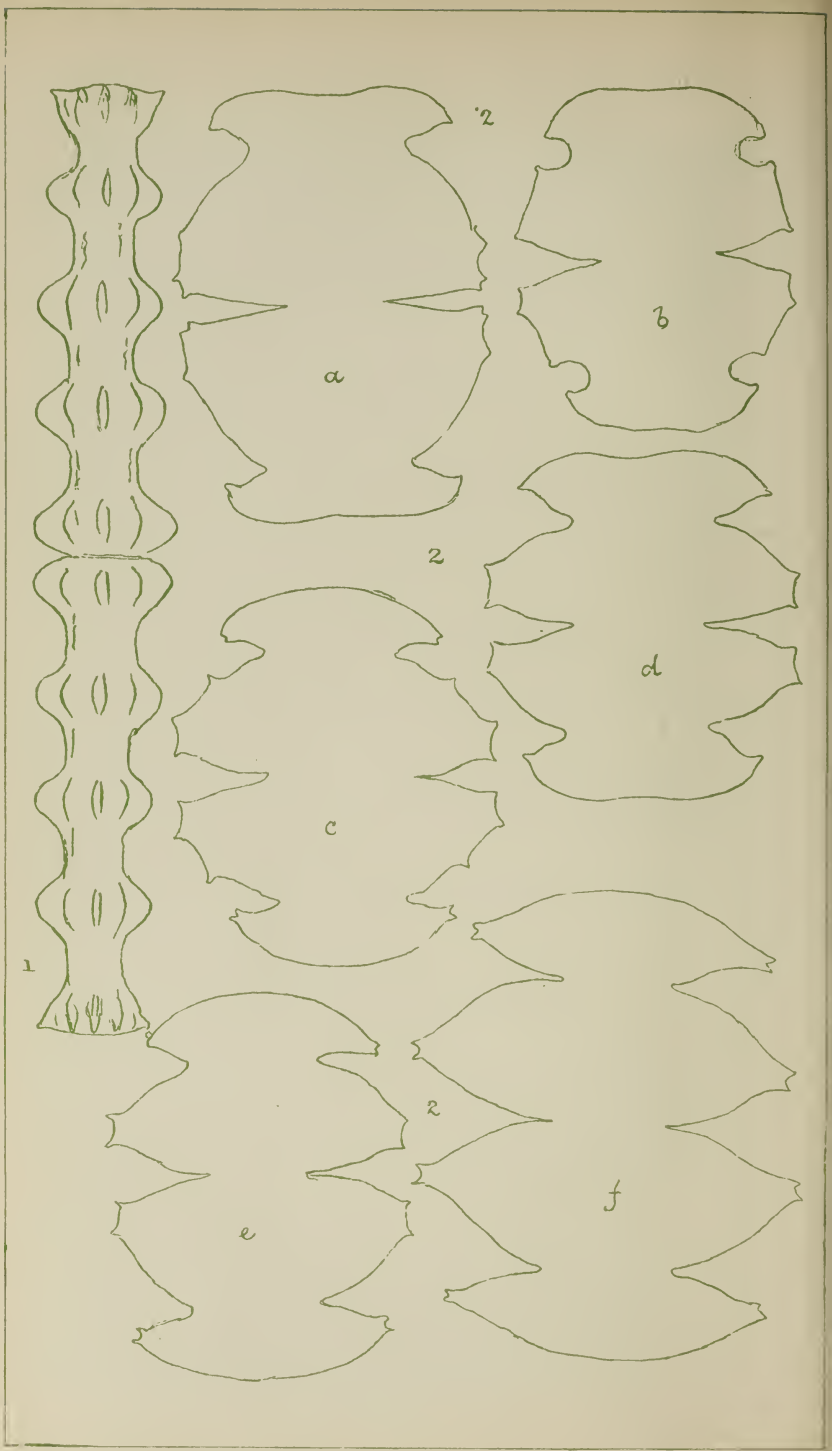
Cosmarium orthostichum, *Lund.*
Also new to the British Islands.

Cosmarium sphalerotrichum, *Lund.*
Another addition to the list of the British Islands.

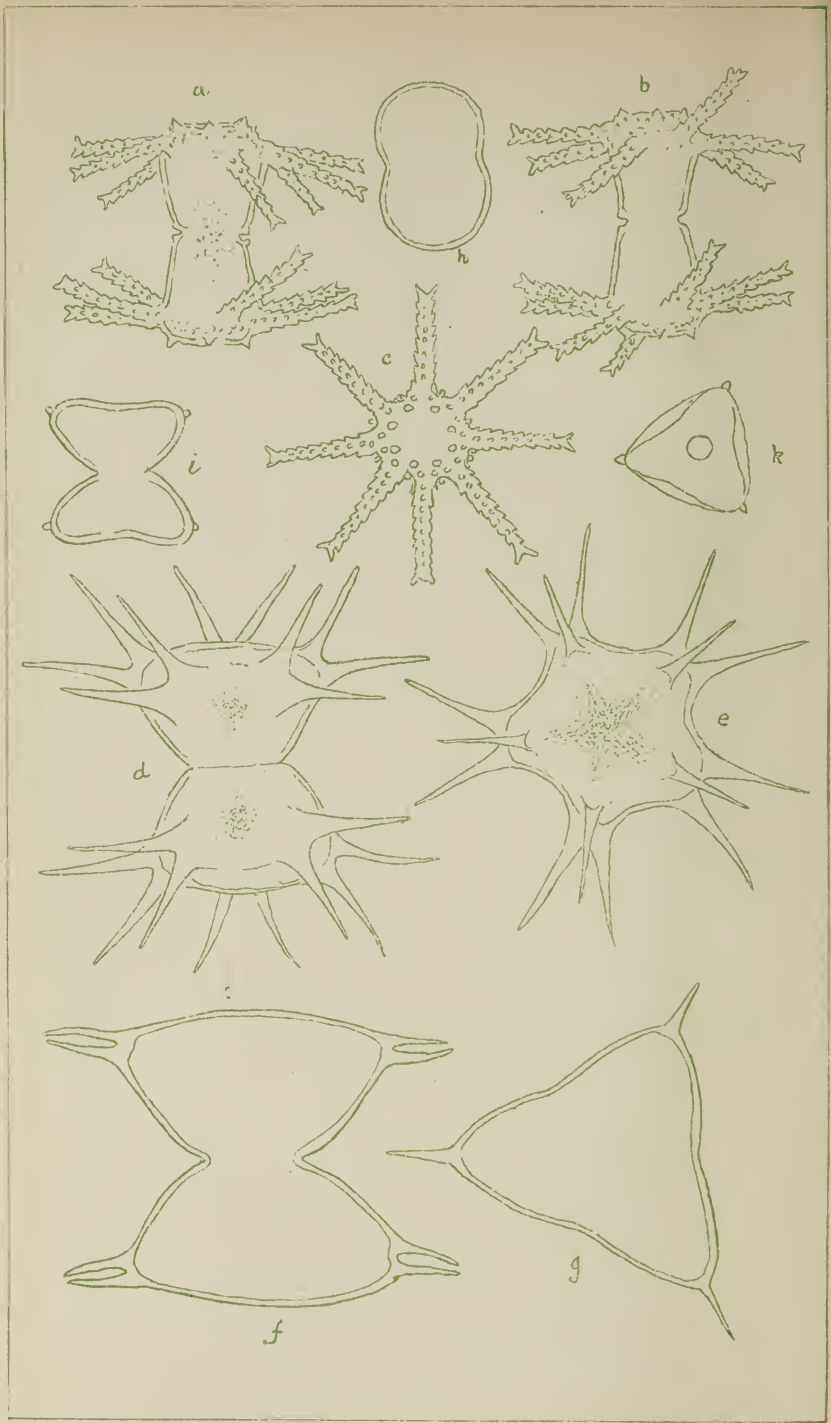
Cosmarium coronatum, *Cke. & Wills.*
Frond about as long as broad, or rather shorter; constriction deep, linear; segments quadrilateral, narrowest at the base, and dilated upwards, very slightly convex at the ends, rough all over with elongated conical granules, arranged in lines (about eight at the end and four on each side), side view truncate at the ends; end view elliptic.

Length ·065-·07 mm. Breadth, ·075-·08 mm. Isthmus, ·02 mm. Side view, ·045 mm. broad.

This resembles *C. biretum* in form, but the granules are conical and prominent as in *C. Brebissonii.* The almost truncate ends, in front view, have eight of these conical projections, which impart a coroneted appearance. In side view the ends are also truncate, which would be sufficient to distinguish it from closely allied species, and the regular elliptic ends separate it distinctly from



1. Docidium nodosum 2. Tetrachastrum.



a. b. c. Staurastrum ophiura. d-e. Staurastrum brasiliense.
f-g. Staurastrum longicpinum
h. Cosmarium pseudoconnatum. i-k. Staurastrum aversum

Cosm. biretum. By many features this seems to be entitled to rank as a distinct species.

Cosmarium cambricum, *Cke. & Wills.*

Frond longer than broad; constriction linear; segments quadrilateral, narrowed from the base, sides with two sinuations, and one in the centre of the end, the latter rather the broadest. Side view, segments oval, narrow, rounded at the ends, with a shallow constriction. End view elliptical.

Length, ·046-·048 mm. Breadth at the base, ·036-·038 mm., at the end, ·02-·022 mm.

Allied to *C. tetragonum* and *C. Nymannianum,* from both of which it differs in the character of the sides and ends, and the number of sinuations. It has been found in two or three stations in North Wales, but not elsewhere. The empty frond seems to be minutely punctate.

Cosmarium globosum, *Buln.* var.

Empty frond, punctate, with a distinct border, the punctæ in diagonal lines. End view circular.

Length, ·035 mm. Breadth, ·022 mm. Breadth at constriction, ·019 mm.

Of the species of *Staurastrum* one of the most noteworthy is—

Staurastrum Brasiliense, *Nordst.*

A large and beautiful species, of which numerous specimens were found, quite new to the British Islands (Pl. 140, figs. *d*, *e*).

Staurastrum arctiscon, *Ehr.*

Not uncommon in the gathering, previously found in Ireland, but now for the first time in Britain.

Staurastrum ophiura, *Lund.*

Uniformly with eight arms (Pl. 140, figs. *a*, *b*, *c*) only recorded hitherto in Connemara.

Staurastrum cerastes, *Lund.*

A most distinct species, which cannot be confounded with any other. Rare in the present gathering. Recorded by Mr. Archer in Ireland.

Staurastrum aversum, *Lund.*

Similar in many respects to *Staurastrum brevispina,* Breb. Previously recorded in Ireland (Pl. 140, figs. *i*, *k*).

Staurastrum grande, *Lund.*

A large species (Pl. 140, fig. 4) not before in the British list. In the majority of the specimens there is a very minute papilla on each side of either segment, and consequently at the three angles of the end view. This form is not represented on the plate, indeed the minute papillæ were not observed until after the plate was printed.

Staurastrum longispinum, *Bailey.*

The form found and figured (Pl. 140, fig. 9) is the same as that of Northern Europe, and not exactly that of the United States. It had already occurred in Ireland.

Staurastrum pseudofurcigerum, *Reinsch.*
Is now recorded for the first time in the British Islands.

Staurastrum Sebaldi, *Reinsch.* var.
The variety of this species figured (Pl. 139, fig. 5) differs from the typical form in its longer arms, but not apparently in any other essential points. The species has been found in Ireland.

Staurastrum Pringsheimii, *Reinsch.*
Also found previously in Ireland, but not hitherto in Britain.

Staurastrum megacanthum, *Lund.*
Appears to be entirely new to the British Islands.

Staurastrum paradoxum, *Meyen.* var. B. **longipes,** *Nordst.*
This peculiar variety also occurred at Capel Curig.

Staurastrum anatinum, *Cke. & Wills* (Pl. 139, fig. 6).
Segments in front view broadly fusiform; rough with prominent granules, which are truncate on the outer margin; processes elongate, rough, terminated with minute spines. End view triradiate, processes elongate, rough, slightly and gradually concave, nodules at the centre truncate.

Length ·05 mm. Breadth, including the processes, ·1 mm. Breadth at the sinus, ·02 mm. Length of the processes, ·025 mm.

Allied to *S. Sebaldi,* but differs in the front view in the broadly fusiform segments, and the upward, rather than downward, direction of the processes, hence, the third process is usually visible on one or both segments in the front view.

Docidium nodosum, *Bailey.* (Pl. 141, fig. 1).
The occurrence of this extraordinary form for the second time in North Wales is noteworthy, the first being at Barmouth, where also it was found by Mr. A. W. Wills, in the year 1867.

This enumeration is confined to the Capel Curig collection. We have notes on species from other localities during the past year, some of which are new to Britain, but these must be postponed until a succeeding number.

LONDON CATALOGUE OF BRITISH MOSSES AND HEPATICÆ *

Bryologists will be glad to learn that the Botanical Record Club has issued a second edition of this useful catalogue brought up to date. It is in two forms—one, printed on both sides of the paper, and one, printed on one side only.

It is unnecessary for us to attempt any commendation, for a catalogue of this kind will commend itself, being, in fact, a necessity for all who are interested in British Bryology. It is neatly and clearly printed, and shows the comparative rarity or frequency of each species by means of a census indicating its distribution through the eighteen Watsonian Provinces of Great Britain.

* London: D. Bogue, 3, St. Martin's Place.

NEW BRITISH FUNGI.

By M. C. Cooke.

(*Continued from Vol. VIII., p.* 11.)

The following includes only a few of the additions found during the past year. Messrs. Berkeley and Broome have others to record, and until this is done any others which may have come to our knowledge may be postponed.

Agaricus (Amanita) virosus, *Fr.* Hym. Eur., 18.

White, pileus conical, then expanded, acute, glutinous ; margin repand, even; stem stuffed, cylindrical above the bulbous base, torn into scales ; volva thick and floccose, as well as the ring which adheres in shreds at the margin of the pileus ; gills free, linear-lanceolate. *Fries Svamp,* t. 84 ; *Cooke Illust.*, t. 1.

In Mr. Hartcup's Plantation, Bungay, in company with Mr. D. Stock (1865), also at Forres (Rev. J. Keith.)

Although the drawing has been in my possession so long, it has not been recorded, by some oversight, until its reproduction for the illustrations brought it again to mind. Several specimens were found on the above occasion, the largest nearly 8 inches high. The conical pileus, appendiculate margin, and scaly stem, are very characteristic.

Agaricus (Amanita) magnificus, *Fr.* Hym. Eur., p. 25.

Already recorded for Scotland. It was found about 12 years since at Highgate, two or three times during one autumn, but has not been seen since. Not being acquainted with the above species until recently, it has not been recorded, but the figure then drawn is reproduced in the "Illustrations," and the Rev. M. J. Berkeley coincides in regarding it as exactly the species of Fries.

Agaricus (Tricholoma) atrosquamosus, *Chev.* Fung. et Byss. Illus.

Gregarious. Pileus convex then flattened, umbonate, pallid cinereous, squamulose; margin rather woolly, squamules of the pileus small, black ; gills ventricose, emarginate, rather thick, scarcely crowded, stem stuffed, fibrillose, white, with a few small black squamulose points about the apex ; base slightly thickened.

In grassy places. Dorking, Nov., 1880.

Pileus about 2 inches, stem $2\frac{1}{2}$-3 inches long, $\frac{1}{2}$ inch thick. In some respects resembling *Ag. terreus* and *Ag. argyraceus,* to which it is allied. Exactly like Chevallier's figures.

Agaricus (Psilocybe) udus, *Pers.* Fr. Hym. Eur., p. 298.

Pileus fleshy, thin, convex, then plane, dry, rugulose, growing pale, stem elongated, thin, tough, fibrillose, ferruginous downwards, gills affixed, ventricose, lax, whitish, then becoming purplish.

In swampy places, amongst *Sphagnum* and *Polytrichum.* Plentiful in Epping Forest. Nov., 1880.

Pileus $\frac{3}{4}$-1 inch broad, becoming flat like a button, ochraceous when dry. Stem 4 inches long, stiff and firm, the lower portion ferruginous. When rooting amongst *Sphagnum* the stem is attenuated to 6 or 7 inches.

Corticium punctulatum, *Cke.*, in "Grevillea" VI., p. 132.

Persistently white, effused, thin, indeterminate, circumference and substratum floccose, of a snowy white. Hymenium at first punctulate, at length smooth and even. Spores globose (·006 mm. diam.).

On chips, &c. Colwyn Bay.

Distinguished from all other white species by the rather large globose spores.

Peniophora rimosa, *Cke.*

At first yellowish-white, then ochraceous in the centre, effused, indeterminate, closely adnate, minutely velvety. Hymenium cracked into minute areolæ, the larger of these exposing the matrix. Hymenial processes most abundant, often in clusters (·05-·07 × ·01 mm.), hyaline, rough nearly to the apex.

On bark. Colwyn Bay.

Externally it bears so close a resemblance to *Corticium Berkeleyi*, C., that when collected it was believed to be that species, but its substance is thicker and firmer, and it is further distinguished by the presence of the processes characteristic of the genus.

Cyphella cyclas, *Cke. & Phil.*

Conchiformis, dimidiata, pendula, albida, tomentosa ($\frac{1}{2}$ in. lata), hymenio lævi, carneo, sporis allantoideis (·007 × ·002 mm.).

On dead wood. Ely (W. Marshall, Esq.).

Resembling a small bivalve shell, about half an inch broad, or less, attached on one side and pendulous. Externally whitish, clad with flexuous hairs, some of which are smooth and others rough. The hymenium when fresh of a beautiful pink flesh colour and smooth. Spores minute, slightly curved and sausage-shaped.

Phyllosticta magnoliæ, *Sacc.* Mich. i., p, 139.

Epiphyllous, spots variable in form, becoming whitish, not marginate. Perithecia punctiform, lens-shaped. Spermatia oblong-ovoid, unequal, ·008-·012 × ·003-·0045 mm., hyaline.

On leaves of *Magnolia grandiflora*. Kew.

Isaria fuciformis, *Berk.*, in Linn. Journ., xiii., p. 175.

Pallid (bright rosy red), slender, filiform, sparingly branched, branches acute, spores very minute, globose.

On grass. Ashford, Kent. Mr. W. R. Jeffrey.

At first found in Australia, and now detected plentifully on grass in this country. Identified by the Rev. M. J. Berkeley with his Australian specimens, although of a bright red, almost like coral, about half an inch high when full grown.

Apiosporium abietis, *Cke.*

Effusum, atrum, velutinum. Hyphis mycelloideis atrobrunneis. Peritheciis globosis, exiguis (·1 mm. diam.). Ascis clavatis (·02 × ·007 mm.). Sporidiis ellipticis, hyalinis (·005 × ·002 mm.).

On twigs of living spruce. Glencorse and Penicuik, N.B.

Investing the young twigs with a black incrustation resembling soot, in which the perithecia are seated. The subiculum consists of an irregular mass of brown cells, resembling a low form of *Sporidesmium*.

CHARACEÆ AMERICANÆ.*

The *Characeæ* have fortunately suffered from their lack of close consanguinity with other cryptogams. Not accepted as Algæ, the Algologists have not considered them as coming within their province. Bryologists, Filicologists, &c., have all disregarded them, and hence the *Characeæ* have been outcasts. It is satisfactory, therefore, to find not only that we have acquired for the British Isles patrons who are taking them under their charge, but also that in the United States Dr. Allen is working in the same direction. The monograph, with coloured plates, of which two parts are issued, is now supplemented by a fasciculus of dried specimens, including ten species, which is to be followed by others. It is to be hoped that the venture will be encouraged.

The species contained in the first fasciculus are :—

Nitella tenuissima, Desv., forma *brevifolia*.
Nitella intermedia, Nordst.
Nitella megacarpa, Allen.
Chara intermedia, Br., forma *tenuior*.
„ *intermedia*, var. *Americana* Br.
„ *contraria*, Br., forma *brachyphylla*.
„ *sejuncta*, Br., forma *elongata*.
„ *coronata*, Br., var. *Schweinitzii*.
„ *gymnopus*, Br., var. *Michauxii*.
„ *hydropitys*, Br., var. *septentrionalis*, N.

ON THELEPHORA LYCII. Pers.

By M. C. Cooke.†

The species of *Corticium* have, unfortunately, had the reputation of being ill defined and difficult to comprehend, and hence they have been much neglected. Those who devote themselves to the study of Agarics, *Boleti*, and *Polypori* consider them beyond the range of their activities, and those who study the micro-fungi discard them as being outside their sphere, and hence no one devotes to them the attention they deserve. I have already shown on a former occasion how, by attention to microscopical features, the

* Characeæ Americanæ Exsiccatæ, distributæ a T. F. Allen, M.D., pars. 1.
† Prepared for the Meeting of the Woolhope Club, Oct., 1880.

genus may be numerically reduced, and their study facilitated. I have now to direct attention to a single species which has been long overlooked.

Persoon, in his "Mycologia Europæa," described (p. 248) a species of *Thelephora*, following *cinerea*, which he called *Thelephora Lycii*, found on the dry branches of *Lycium barbarum*. Subsequently Desmazieres published in his "Exsiccati" what he considered the same species, on branches of the Lilac, adding that he had found it also on the Ash. Many years ago I found the same species on the Ash, but not having seen the specimens issued by Desmazieres, these always remained without a name, as I could not refer them to any species with which I was acquainted. This year I have met with them again, but this time on the Lilac, in Kew Gardens.

By comparison I am satisfied that my specimens are identical with those published by Desmazieres. I have no direct evidence of the species being that of Persoon, but the presumptive evidence is strong in its favour.

Fries appears to have known the *Thel. Lycii* P. only by repute, for he had not seen specimens. In his *Elenchus*, under "*Thelephora limitata*," he says *Th. Lycii* is possibly referable to this species. On the next page he includes it amongst his uncertain forms, which he considered as imperfect states of the species he had previously described.

That Fries was wrong I think manifest from the fact that what is I believe an authentic specimen of *Corticium limitatum* in the Berkeley herbarum is a species of *Peniophora* with the characteristic bodies on the hymenium, and there are none of these on *Thel. Lycii*, although the hymenium is perfectly mature. From this I conclude that the species are not identical. It is true that the description of *Cort. violaceo-lividum* is very like *Cort. Lycii*, but specimens of that plant have a very different appearance. I am, therefore, strongly of opinion that this which I consider to be the *Thelephora Lycii*, Pers., cannot be referred to any European species, and is in itself distinct.

Persoon says of it briefly, "sub-orbicularis, crassiuscula, confluens, glabra; papillis minutis subcongestis." He afterwards adds in a note that the single individuals are half an inch broad, subrugose, with the margin sub-repand, whitish, becoming cinereous, subpulverulent.

It is characterised by growing in small discoid patches $\frac{1}{4}$-$\frac{1}{2}$ in. in diameter, with at first a whitish byssoid circumference, of a pale rosy grey tint, papillate in the centre, and cracking when old. There is a tendency to grow around the old pustules of a *Sphæria* after the manner of *C. polygonium*. But it is thinner and more delicate, and of a different colour to *C. polygonium*, to which it has really the nearest external resemblance.

To *C. cinereum* it could not be referred, as that is also a *Peniophora*. I have carefully compared it with all the forms of allied

species of *Corticium* found in Europe, and cannot feel satisfied to include it with any of them, but to recognise it as *Corticium Lycii* of Persoon, for all the species of *Corticium* were included by him under *Thelephora*. It is at least the *Thelephora Lycii* of Desmazieres, for of this authentic specimens place it beyond doubt, and it has been found on precisely the same plant. Whether of Persoon or Desmazieres the name is the same, and it must be left to the conscience of mycologists to determine the rest.

SOME EXOTIC FUNGI.

By M. C. Cooke.

The majority of the fungi enumerated in the following list are in the Herbarium of the Royal Gardens at Kew. Many of them have been recently received. The names of species already described are only enumerated for places where our knowledge of the Mycologic Flora is scanty.

Mauritius.

Lentinus calvescens, *Berk.* (No. 6.)
Lentinus exilis, *Kl.* (No. 9.)
Lentinus stuppeus, *Kl.* (No. 14.)
Lenzites applanata, *Fr.* (No. 5·13.)
Lenzites deplanata, *Fr.* (No. 12.)
Polyporus (Pleuropus) flabelliformis, *N.* (No. 4.)
Polyporus (Pleuropus) affinis, *Nees.* (No. 3.)
Polyporus (Pleuropus) amboinensis. (No. 17.)
Polyporus (Pleuropus) sanguineus, *Fr.* (No. 7.)
Polyporus (Pleuropus) popanoides, *Cke.*

Pileo carnoso, fragili, albo, glabro, tuberculoso, magno. Stipite laterali, brevi, crasso, solido; margine incurvo, flexuoso; poris curtis, minutis, integris, albo-pallescentibus.

On the ground (?). Mauritius, No. 15.

Pileus nine inches in diameter and one inch thick in the centre, whitish, resembling a large cracknel biscuit. Substance soft, resembling that of *P. sulfureus*. Stem lateral, nearly two inches long, and one inch thick, probably growing from rotten wood.

Polyporus (Anodermei) betulinus, *Fr.*
Polyporus (Placodermei) rubiginosus, *Berk.* (21.)

A curious proliferous form.

Polyporus (Placodermei) nigrolaccatus, *Cke.*

Pileo flabellæformi, convexo-plano, suberoso-lignoso, sulcato-rugoso; margine crispato, castaneo-nigrescente, laccato, nitido, dein opaco; intus molli, floccoso; poris pallidis, demum umbrinis, rotundis, minimis.

On wood. Mauritius, No. 2.

Pileus 8 by 5 inches, $1\frac{1}{2}$ inches thick behind, attenuated outwards, sometimes pendulous. At first laccate, and resembling some of the sessile forms of *P. lucidus*, but in many features quite distinct.

Polyporus (Inodermei) caperatus, *B.* (No. 19.)

Trametes hystrix, *Cke.*

Pileo suberoso, applanato, azono, fusco, setis rigidis, compressis, atro-fuscis strigoso, intus pallide fusco ; poris mediis, rotundis, æqualibus, obtusis, fuscis (·7 mm. diam), dissepimentis crassis.

On trunks. Mauritius, No. 1.

Allied to *T. hydnoides* and *T. fibrosa*, but pores much larger than in either. Pileus 4-5 inches by $2\frac{1}{2}$ inches, about $1\frac{1}{4}$ inch thick behind, margin acute.

Trametes ungulatus, *Berk.* (No. 18.)

Favolus hepaticus, *Kl.*

Cyclomyces fuscus, *Kze.*

Hydnum ochraceum, *Fr.*

Cladoderris dendritica, *P.* (No. 8.)

Stereum lobatum, *Kze.*

Hirneola auricula-Judaæ, *Fr.* (No. 11.)

Andaman Islands.

Collected by the late S. Kurz.

Polyporus grammocephalus, *B.*

Polyporus Curreyi, *Berk.*

Lentinus exilis, *Kl.*

Lentinus revelatus, *Berk.*

Lenzites repanda, *Fr.*

West Africa.

Hydnum (Apus) durescens, *Cke.*

Pallido-fulvum. Pileo coriaceo-lignoso, tenui, undulato, striato, concentrice subzonato, glabro, durescente ; margine acuto, flexuoso ; aculeis rigidis, crassiusculis, brevibus, obtusis, regularibus, ($1\frac{1}{2}$-2 mm. long.)

On wood. West Africa (Mann. No. 9.)

Allied to *H. glabrescens*, Berk. 3-$3\frac{1}{2}$ inches broad, $2\frac{1}{2}$in. long, substance thin but hard. Hymenium rather darker than the pileus. A most distinct and characteristic species, with the habit of a *Polyporus*.

Jamaica.

Ustilago strumosa, *Cke.*

Stroma nodulosa, globosa, dura, pallida, punctata, sclerotiformis, intus concolor. Sporis in peripheriçis, sub cuticulâ gerentibus, olivaceis ; sub lente globosis, ovalibus, ovoideis, regularibus, vel sub-irregularibus (·006-·008 mm. diam.) olivaceo-brunneis, episporio tenui, lævi.

On *Chusquea abietifolia.* Jamaica.

A very singular and interesting species, forming hard globose nodules (6-8 millemetres diam.) on the culms of the grass.

Corynelia uberata, *Fr.*

Xylaria Domingensis, *B.*

Cercospora coffeicola, *Berk. & Cke.*

Hypophylla. Maculis amphigenis, orbicularibus, albidis, purpureo-cinctis. Hyphis brevibus, fasciculatis, olivaceis Sporis subcylindricis, hyalinis, 2-3 septatis, paucis (·04-·06 × ·0035 mm.).

On coffee leaves.

Venezuela.

Sphærella Psammisiæ, *Cke.*

Epiphylla. Maculis orbicularibus, hinc illic confluentibus, magnis, pallidis, rubro-cinctis. Peritheciis paucis, subprominentibus, atris; ascis clavatis, sessilibus; sporidiis biseriatis, ellipticis, inæqualiter uniseptatis, hyalinis (·015 ×005 mm.).

On leaves of *Psammisia pendulifera.* Caracas (Dr. Ernst).

India.

Polyporus (Inodermei) æthiops, *Cke.*

Nigrescens. Pileo coriaceo, convexo, rigidi, breviter velutino, intus purpureo-fusco, postice adnato-decurrente, poris minutis, rotundatis, regularibus, $\frac{1}{6}$th. mm. diam, dissepimentis crassiusculis.

On bark. India (1225.)

Pileus from $\frac{1}{4}$ to 1 inch broad. Substance of a dark purple brown. Externally becoming entirely black when dry.

Brazil.

Communicated by M. Glaziou.

Agaricus (Lepiota) gracilentus, *Fr.* (9141.)

Agaricus (Lepiota) mastoideus, *Fr.* (9142.)

Agaricus (Lepiota) procerus, *Fr.* var. (9144.)

Agaricus (Lepiota) flavido-rufus, *B. & Br.* (9145.)

Agaricus (Collybia) radiculosus, *Cke.*

Pileo carnoso, tenui, convexo-plano, obtuso, glabro; stipite farcto, radicato, superne attenuato; lamellis adnexis, subconfertis, albidis.

On wood (?) (9149.)

Pileus $1\frac{1}{2}$ to 2 in. broad; stem 2 inches long, attenuated upwards, gibbous below, then suddenly contracted and rooting. Apparently cæspitose, and nearly white.

Agaricus (Psalliota) insinuatus, *Cke.*

Pileo carnoso, ex ovato expanso, obtuse umbonato, fusco, squamis latis adpressis tecto, margine primo infracto, fibrilloso-striato; stipite crasso, abrupte bulboso, subradicato; annulo fibrilloso, evanido. Lamellis subliberis, latis, ventricosis, fusco-purpureis.

On the ground (?) Rio Janeiro. (9146.)

Pileus 4-5 inches, stem 4 inches high, $\frac{3}{4}$ in. thick, squamulose to the middle, with a large fleshy umbo. Stem, with an abrupt bulbous base, contracted below and rooting. Veil only a few fibrils attached to the stem. Resembling *Ag. hæmorrhoidalis* in size and appearance, but the ring is almost obsolete, whereby it approaches *Hypholoma*, as well as by the almost attached gills.

Agaricus (Psilocybe) fortunatus, *Cke.*

Pileo carnosulo, campanulato-expanso, obtuso, lævi. Stipite erecto, rigido, fistuloso, fusco, lineato-striato, ad basim vix incrassato. Lamellis adnatis, vix confertis, atro-fuscis. Sporis amygdalæformibus, purpureis (·018 × ·009 mm.).

On the ground. Rio Janeiro. (No. 9150.)

Pileus $1\frac{1}{2}$ in. broad and high. Stem 6 inches long, $\frac{1}{8}$ in. thick, rigid, marked with longitudinal lines. Doubtless larger when fresh. A fine species.

Panus subtorulosus, *Cke.*

Pileo e carnoso-lento coriaceo, inæqualis, excentrico dimidiatoque, breviter velutino (sicco fusco), margine incurvo, postice in stipitem distinctum tomentosum porrecto, lamellis decurrentibus, angustissimis, confertis, concoloribus.

Rio Janeiro. (9153.)

Forming dense clusters springing from a thick common base, each pileus $\frac{1}{2}$ to 1 in. broad, with a distinct velvety stem nearly an inch long. Gills very narrow, and much crowded, deeply decurrent. Allied to *Panus quaquaversus*, B.

Polyporus (Inodermei) sepiater, *Cke.*

Pileo suberoso, convexo, concentrice sulcato, primo striato, demum glabro, atro-umbrino, intus pallido-lignoso, poris elongatis ($2\frac{1}{2}$-3 m.) minutissimis, rotundatis, obscurioribus.

On branches. (12340.)

Pileus 1-$1\frac{3}{4}$ in. wide, 1-$1\frac{1}{4}$ in. long, entire, thickness about one-eighth of an inch. Somewhat resembling *P. sideroides*, Lev., but entirely sessile, and not velvety. The pores are so minute as to be scarcely visible under a pocket-lens. The dark sepia-brown colour justifies the name of *sepiater*.

Polyporus fulvi-tinctus, *B. & C.*

On trunks. (12329.)

Beccaria cæspitosa, *Cke.*

Pileo coriaceo, multiplici, infundibuliformi, e variis lobis stipitibusque confluentibus oriundo, sursum striato, glabro; margine lobulato; hymenio papillas acutas in lineas parallelibus ornato.

On the ground (?). Rio Janeiro.

Tufts 3-4 inches broad, 2 inches high. No indication is given of the colour in a fresh state, hence the diagnosis is imperfect. The papillæ of the hymenium shrink in drying, so as to be almost imperceptible, but assume the form of teeth, arranged in parallel lines when moistened. A very curious fungus, referred with some hesitation, to the genus instituted by Baron V. de Cesati.

Hymenochæte tuberculosa, *Cke.*

Tota resupinata, crassa, durissima, tuberculosa, purpureo-umbrina, subtus ferruginea. Setis sparsis, rigidis, acutis (·05-·06 × ·008 mm.).

On bark. Rio Janeiro. (12332.)

Extending in a thick, hard tuberculated crust for several inches. Most nearly related to *H. corticolor*, B. & C., but thicker, harder, and different in colour.

Stereum portentosum, *B. & C.*

On bark. (12333)

Midotis regularis, *Cke. & Phil.*

Erumpens. Stipite brevi, ramoso; ramulis brevissimis. Cupulis concavis, fuscis, punctatis; margine inflexo. Hymenio obscuriore, lævi. Ascis cylindraceis. Sporidiis ellipticis (·01-·013 × ·004-·005 mm.) Paraphyses linearibus.

On rotten wood. Rio Janeiro. (9162.)

WITTROCK AND NORDSTEDT'S ALGÆ.

The seventh fasciculus of Wittrock and Nordstedt's "Algæ aquæ dulcis exsiccatæ" includes the following new species of *Desmids*, chiefly Brazilian:—

Desmidium laticeps, *Nordst.*

Habitu *Desmidio cylindrico* (Grev.), simile at latitudo cellularum longitudine circiter triplo (vel sub-quadruplo) major est, latitudo marginis, apicalis circiter $\frac{4}{5}$ diametro transversalis cellulæ, crassitudo cellulæ fere dimidium longitudinis.

Var. α **ellipticum.**

Long ·023-·028 mm., lat. ·076-·078 mm. crass., ·056-·058 mm., isthm. ·07 mm.

Var. β **quadrangulare.**

Long ·02-·023 mm., lat. ·076-·082 mm. crass., ·054-·06 mm., isthm. ·068-·074 mm.

In freshwater. Brazil.

Closterium subcostatum, *Nordst.*

Habitu *Cl. costato* (Ralfs, t. 29, f. 1), simile, sed brevius, diametro 5-plo longius, apicibus angustioribus obtusis, membrana (rufa) costis longitudinalibus 11-12, in ipso apice rotundato nullis, nucleis amylaceis secundum observationes A. Löfgren factas sparsis, locello apicali parvo corpuscula 1-5 includente.

Lat. 05-·06 mm., long ·25-·3 mm., lat. apic. ·012-·014 mm.

In clay ditches. Brazil.

Allied to *Clost. Isis*, Cohn (Desm., Bong., t. xi, f. 15), in which the disposition of the amylaceous nuclei are not noted, but more curvate.

Closterium subturgidum, *Nordst.*

Habitu *Clost. turgidi*, sed majus et prae longitudinem crassius, nucleis multis sparsis, membrana dilute fuscescente subtiliter striata, striis 6-7 in ·01 mm., apicibus rectis magis truncatis et membrana incrassata ornatis sæpe rufescentibus.

Lat. ·082 × ·1 mm., long ·75-·1 mm., lat. apic. ·02 mm.

In fresh water. Brazil.

Closterium laterale, *Nordst.*

Leviter semilunare, lineari-lanceolatum, diametro 8-11 plo longius, ventre late subtumidum, utroque polo sensim attenuatum, apicibus truncatis, membrana parum colorata subtilissime striata, striis ægre conspicuis, laminis chlorophyllaceis circ. 5 sublateralibus nucleos amylaceos multos in quaque lamina in seriem unicam ordinatos includentibus, locello apicali granulis (circ. 10) repletis.

Diam. ·05-·06 mm., long ·45-·53 mm. lat., apic. circ. ·008 mm.

In river. Brazil.

Allied to *Cl. acerosum*, var. *subangustum* (Klebs.), *Cl. Ralfsii* (Breb.), *Cl. angustum* (Hantsch), *Cl hirudo* (Delp), *Cl. decorum* (Breb.), but differing in the amylaceous granules not being uniseriate or central.

Cosmarium binum, *Nordst.*

Diametro quarta, l. quinta parte longius, medio profunde constrictum, sinu lineari angustissime (extremo ampliato) ; semi-cellulæ pyramidatæ apice late truncato 6-crenatæ, angulis inferioribus rotundato-obtusis, lateribus modice convexis crenatis, crenis circ. 10 (bigranulatis), supra isthmum tumore plus minus circulari l. elliptico granulato, granulis in series circ. 7 verticales apicibus convergentes, dense ordinatis et infra magis sparsis vel in 2 series horizontales positis ornatæ, ad marginem versus granulatæ, granulis radiatim et concentrice dispositis in seriebus (2-3), interioribus singulis, ceteris binis; a latere visæ tumore basili; a vertice oblongæ medio utrinque tumidæ. Latitudo isthmi latitudine apicis modo paullo minor; nucleo amylacei bini.

Lat. ·07-·072 mm. long ·086-·09 mm., lat. isthm. ·021-·024 mm.

Cosmarium quarternarium, *Nordst.*

Paulo longius quam latius, medio profund econstrictum, sinu lineari (interne paullum dilatato), extremo ampliato; semicellulæ subtrapezicæ basi subreniformi, apice late truncatæ granulis nullis, angulis inferioribus obtuso-rotundatis, superioribus rotundatis, lateribus paullo convexis, granulato-crenatis, membrana granulis sub-parvis ex apice radiantibus ornata, in area magna centrali sub-circulari-elliptica, granulis inter se jugis connexis, unde scrobiculæ fiunt; a vertice visæ ellipticæ granulis e centro non granulato radiantibus ; a latere circulares. Massa chlorophyllacea e laminis 4 parietalibus nucleis amylaceis singulis formata.

Lat. ·058-·065 mm., long ·068-·072 mm., crass. ·038-·04 mm., lat. isthm. ·02-·024 mm.

With the habit of *Cosm. Brebissonii*, as figured by Delponte (t. ix, f. 17-22), but differing in the granules and the disposition of the chlorophyll.

NEW JERSEY FUNGI.

By M. C. Cooke and J. B. Ellis.

Polyporus (Resupinatus) fumosogriseus, *C. & E.*

Effusus, coriaceus, tenuis, mycelio mucedino albo, floccoso; margine albo, sublibero, poris curtis, irregularibus, angulatis, subconfluentibus, fumoso-griseis, acie primo albidis, dissepimentis tenuibus.

On bark of *Juglans*. (3409.)

The hymenium shrinks and cracks in drying, exposing the white substratum, somewhat resembling *P. viridans*, B. & Br., but darker, and of a different colour.

Hydnum (Resupinatum) pallidum, *C. & E.*

Albidum, effusum; subiculo membranaceo, molli, margine villoso; aculeis gracilibus, acutis (vix 1 mm. long), hinc illic confertis, candidis demum fuscescentibus.

On rotten wood of *Quercus*. (3118.)

Seems to be quite distinct from *H. mucidum*, P., and *H. diaphanum*, Schrad.

Odontia fusca, *C. & E.*

Effusa, membranacea, costis rhizomorpheis percursa, pallida, ambitu fibrilloso-radiato; verrucis minutis, confertis, granulatis, apice multifidis, demum fuscescentibus, dein intense umbrinis, fatiscentibus.

On rotten wood. (3429.)

With the habit of *O. fimbriata*, but of a bright clear brown, becoming quite dark and cracking when old.

Grandinia tabacina, *C. & E.*

Ceracea, late effusa, adglutinata, tabacina; ambitu subradiante; granulis confertissimis, inæqualibus, hæmisphericis, mollibus, sporis globosis.

On *Juniperus virginiana*. (3086.)

Colour of *Hymenochæte tabacina*. Habit that of *Grandinia granulosa*.

Corticium effuscatum, *C. & E.*

Effusum, incrustans, aureofulvum, absque pellicula, ambitu concolore; hymenio pulverulento, fragili, fatiscente, fuscescente. Sporis profusis, globosis, lævibus, hyalinis (·006 mm. diam.).

On rotten log. (3401.)

Its only near ally is *Corticium pactolinum*, C. & H. These agree in the fragile pulverulent hymenium, and profuse globose spores.

RELIQUÆ LIBERTIANÆ

DISCOMYCETES,

By M. C. Cooke and W. Phillips.

Peziza (Acetabula) vulgaris, *Fr.* 547.
„ (Cochlearia) badia, *P.* 902, 909.
„ („) abietina, *P.* 930.
„ (Discina) venosa, *Fr.* 891.
„ (Galactinia) succosa, *B.* 889.
„ (Pustularia) cerea, *Sow.* 933.
„ („) castanea, *Q.* (?) 549.
„ (Geoscypha) ampliata, *P.* (?) 923.
„ („) sepiatra, *Cke.* 907.

Peziza (Humaria) psilopezoides, *Cke. & Phil.*

Applanata, fusco-nigra, sessilis. Cupulis sparsis (3-5 mm. lat.), subtus arcte adnatis; margine vix elevatis. Ascis cylindricis. Sporidiis ellipticis, lævibus (·02 × ·012 mm.); paraphysibus cohærentibus, supra fuscis.

On rotten wood. (No. 895.)

Peziza (Pyronema) omphalodes, *Bull.* 573.
„ (Humaria) glumarum, *Desm.* 897.
„ (Scutellinia) umbrorum, *Fckl.* 578.

Peziza (Scutellinia) arctespora, *Cke. & Phil.*

Gregaria, fusca, sessilis. Cupulis hemisphericis (2-4 mm.), extus margineque strigosis. Pilis gracilibus, acutis, brunneis, Hymenio rubro. Ascis cylindricis. Sporis sublanceolatis, utrinque obtusis, uni-guttulatis, hyalinis (·022 × ·005-·008 mm.). Paraphysibus leniter clavatis.

On the ground under fir trees. (888 bis.)

Peziza (Scutellinia) labellum, *P.* 934.
Scarcely fully matured. Sporidia ·019 × ·013-·015 mm.
Peziza (Dasyscypha) virginea, *Batsch.* 583, 901.
„ („) „ var. spiræicola, *Karst.* 900.
„ („) nivea, *Fr.* 925, 926.
„ („) patula, *P.* 560.
„ („) acuum, *Fr.* 548.
„ (Cyphella) villosa, *P.* 582.
„ (Dasyscypha) luzulina, *Phil.* 935.
„ („) corticalis, *P.* 563.
„ („) barbata, *Kze.* 581.
„ („) cerina, *P.* 559.
„ („) senecionis, *C. & Ph.* 931.
„ („) albotestacea, *Desm.* 932.

Peziza (Dasyscypha) seminis, *Cke. & Phil.*

Ochracea, stipitata. Cupulis clavatis, demum concavis ($\frac{1}{2}$-1 mm. diam.), extus tomentosis; stipite crasso, vix deorsum atten-

uato (1 mm.). Ascis clavatis. Sporidiis arcte ellipticis, minutis (·005 × ·0025 mm.).
Growing on *Sclerotium semen*. (No. 894.)

Peziza (Tapesia) Rosæ, *P.* 575 *a*, *b*.
„ („) fusca, *P.* Pallid form. 898.

Peziza (Tapezia) ruborum, *Cke. & Phil.*
Subgregaria, ceraceo-flava, subiculo tenui, evanido, concolori, nidulans. Cupulis concavis, demum applanatis, extus tomentosis, fuscis ($\frac{1}{2}$-1 mm.). Tomento tenui, sparso. Ascis clavatis. Sporidiis sublanceolatis, demum triseptatis, hyalinis (·015 × .005 mm.).
On *Rubus*. (No. 936 bis.)

Peziza (Hymenoscypha) cyathoidea, *Bull.* 913, 977 bis, 567, 936.
„ („) strobilina, *Fr.* 580.
„ („) scutula, *P.* 585, 577.
„ („) coronata, *Fr.* 562.
„ („) calyculus, *Fr.* 554.
„ („) bolaris, *Batsch.* 584.
„ („) tuberosa, *Hedw.* 920.
„ (Mollisia) sphæroides, *P.* 550.
„ („) caricina, *Desm.* 556.
„ („) atrata, *P.* forma Valerianæ. 679.
„ („) excelsior, *Karst.* 571.
„ („) fallax, *Desm.* 912.
„ („) cinerea, *Batsch.* 575*c*.
„ („) ventosa, *Karst.* 899.
„ („) livido-fusca, *Fr.* 568.

Peziza (Mollisia) ribesia, *Cke. & Ph.*
Sparsa, atra, ceraceo-mollis. Cupulis globosis, arcte apertis, dein concavis, hemisphericis, glaberrimis (1-4 mm. diam.) Ascis clavatis. Sporidiis exiguis, hyalinis (·005 × ·001 mm.).
On *Ribes rubrum*. (No. 910.)

Peziza (Mollisia) betulina, *A. & S.* 553.
„ („) nervisequa, *P.* 572.
„ (Calloria) xanthostigma, *Fr.* 586, 589.
„ („) vinosa, *P.* 916.
„ („) coccinella, *Fr.* 588.
Helotium alniella (*Nyl*). 902.
„ conigenum var. β incarnatum, *Fr.* 370.
„ epiphyllum, *P.* 558 ter., 576, 558 bis.
„ fagineum, *Fckl.* 890.
„ citrinum, *Hedw.* 558.
„ pallescens, *Fr.* 576 bis.
„ „ var. Genistæ. 921.
Patellaria fusco-atrum, *Rehm.*

Possibly a variety of this species, to which it seems too closely allied to be regarded as a distinct species. Cups $\frac{1}{4}$-$\frac{1}{2}$ mm. diam. Sporidia ·015-·02 × ·003-·004 mm., triseptate.
On trunks. (No. 574.)

Dermatea conigena, *Phil.*
Sparsa, ceraceo-cornea, incarnata ($\frac{1}{4}$-1 mm. diam.). Cupulis convexis, lentiformibus, sessilibus. Ascis clavatis. Sporidiis arcte ellipticis, binucleatis (·015-·02 × ·005-·008 mm.). Paraphysibus hinc illic furcatis, linearibus, hyalinis.
On fir cones. (No. 903.)

Tympanis Frangulæ, *Fr.* 1026.
„ Fraxini, *Fr.* 1029.
„ Ariæ, *Fr.* 1023, 1024.
Hysterium Prostii, *Duby.* 871.
„ Roussellii, *Duby.* 872.
Glonium graphicum, *Fr.* 877.
Triblidium calciiforme, *Reb.* 607.
Lophodermium juniperinum, *Fr.* 875.
„ pinastri, *Chev.* 874.
„ arundinaceum, *Chev.* 868.
„ apiculatum, *Duby.* 867.
Cenangium Rubi, *Fr.* 847.
Phacidium Vaccinii, *Fr.* 969.
„ Pini, *Fr.* 939.
„ luzulinum (*Karst.*, sub Mollisia). 971.
Stictis versicolor, *Fr.* 972.
„ punctiformis, *P.* 974.
„ nivea, *P.* 973.
No. 922 is *Lecidea parasitica.*

WOOLHOPE CLUB ANNUAL FORAY.

Unusual pressure upon our pages by the publication of the long list of British Fungi which have been recorded therein during the past eight years, prevented us from giving an account of the last Hereford Meeting, but as this was recorded in the "Gardener's Chronicle," to which most of our readers have access, and as the meeting was not particularly rich in new discoveries, on account of the unfortunate weather, this omission may be condoned. Our present object is to announce that the next Annual Foray will take place on the first Thursday in October, 1881, and the assembly will commence, as usual, on the previous Monday.

FUNGI MACOWANIANI.

By C. Kalchbrenner.

Ag. (Amanita) muscarius, *L. Fr. Epicr.*, 5.
In pine woods, near Cape Town; first detected by A. E. Eaton in 1874.

Ag. (Lepiota) procerus, *Scop. Fr. Ep.*, 12.
Somerset East (MacOwan). No. 1246.
The African fungus has the stature and habit of *Agaricus procerus*, but the stem is smooth, and not squamose, hence approaching *A. subtomentosus*, Kr. The same form occurs in Brazil.

Ag. (Lepiota) Zeyheri, *Berkl.* Fung. Uitenhage, No. 1, in Hook. Lond. Journ. ii., 1834. Fries Fung, Natal, p. 2.
Variabilis, hinc ægre limitanda species. In forma primaria; stipes validus, spithamaceus, pileus amplus; marginem versus in areolas squamiformes, angulatas, diffractus. Varietates, vel si libet subspecies notabiliores sunt:—
(*a*) **telosus,** K. et M.Ow.—Æque spectabilis, pileo e globoso-expanso, in squamas latas, fuscas lacero, tela araneosa, delicatula co-operto, albo-flavescente.
(*b*) **verucellosus.**—Minor, stipite gracili, calamum scriporium crasso, basi bulbilloso, pileo subumbonato, verucellis aut squamulis fuscis eleganter punctato. Ilis notis congruit cum fungo a cel. Drege ad Cap. b. spei quondam lecto=(*Ag. verucellosus*, Miquel. Fung. exot., No. 1), differt vero stipite toto albo. Sed adsunt formæ ad *Ag. Zeyheri* accedentes. Tales exhibet, pro parte, de Thuemen Mycotheca univ., No. 701.
Somerset East (MacOwan). Nos. 1001, 1011a. P. Natal, Inanda (J. M. Wood). No. 392.

Ag. (Lepiota) excoriatus, *Schæff. Fr. Ep.*, 13.
Sub pluribus formis. In terra argillacea camporum, et arvorum prope Somerset East (MacOwan). No. 1001d. Ad *Bazuja Caffrariæ* (Rev. Baur). Port Natal (Wood No. 331).
Adest sub No. 1430 (MacOw.) forma stipite curto et pileo, pro ratione lato, hemisphærico insignis, ulterius observanda.

Ag. (Lepiota) polysarcos, *K. et M.Ow.*
Totus albus. Pileus eximie carnosus, centro depressus, ad marginem declivis, lævis, vel subtilissime squamuloso-punctulatus. Annulus mobilis; stipes farctus, lævis, basi bulbosus; lamellæ valde remotæ, postice attenuatæ, confertæ, pallidæ, exsiccatione cum stipite brunneo-rufescentes.
Somerset East (MacOw.). No. 1370.
Pileus 3-5 unc. latus; stipes 2-3 unc. long, $\frac{1}{2}$-$\frac{3}{4}$ unc. crassus. Caro pilei $\frac{1}{2}$-1 unc. crassa, in centro et ad marginem declivem, quasi oblique truncatum, valde attenuata. Forma inconsveta pilei ab affinibus, primo visu distinquenda species.

Ag. (Lepiota) pleropus, *K. et M.Ow.* in "Grevillea" IX., *p.* 17.

Agarico Friesii proximus, sed stipite *solido* subæquali, vel deorsum attenuato, et lamellis *adnatis*, angustis distinctus. Odor fortissimus raphanoideus. Frequens videtur!

Somerset East (MacOwan.). No. 1120, subpluri. Formis, A, B, C, D, E. P. Natal (Wood, Nos. 345, 356, 359, 372, 392).

Magnitudine et colore varius, pileo 2-4 unc. lato, stipite 2-6 unc. alto, 3-10 lin. crasso, albidus, rufescens, imo brunneo-lateritius. Stipes superne pallidus, ad basim coloratus, squamosus, nunquam bulbosus. Verus *Ag. Friesii*, Lasch., in his torris deesse videtur.

Ag. (Lepiota) sulfurellus, *K. et Cooke.*

Subconcolor, sulfureus. Pileus convexo-planus, umbonatus, tenuis, vix pollicem latus, in umbone glaber, umbrinus, ceterum squamulis verrucæformibus, sparsis, umbrinis notatus, margine striatulus; stipes tenuis, fistulosus, æqualis, glaber; annulus membranaceus, pendulus; lamellæ approximatæ, vix confertæ, ventricosæ. Sporæ late ovatæ $0{\cdot}006 \times 0{\cdot}0035$ mm.

P. Natal (by J. M. Wood). No. 387.

Ab *Ag. citrophyllo*, B. et Br. ("Fung. of Ceyl.," No. 55), ob annulum membranaceum, alienus. Chartam colore pulchre sulfureo tingit.

Ag. (Lepiota) varians, *K. et M.Ow.*

(*Ag* (*Lepiota*) *rubricatus*, B. & Br., prox. in "Grevillea" ix., p. 17.)

Pileus tenuis, e conico-campanulato, planus, leviter umbonatus, 1-3 centm. latus, lævis, glaber, subsericeus, passim excoriatus, albus, cinerascens, carneus, vel fusco purpureus, margine striatus; stipes farctus, gracilis, 3-7 centm. longus, 1-4 mm. crassus, subaqualis, basi leviter bulbosus, mycelio albido obductus, ceterum glaber, pallescens aut rubescens; annulus medius, fixus, erectus, floccoso-membranaceus. Lamellæ remotæ, subdistantes, ventricosæ, albæ.

Inter folia putrida arbustorum ad ped. montis Boschberg (MacOwan). No. 1195.

E. Mesomorphis.—Ab *Ag. sordescente*, B. et C. (Cuban Fung., No. 4), vix, nisi colore pilei læto et lamellis ventricosis, latiusculis, distinctus.

Ag. (Lepiota) magnannulatus, *Kalchbr.*

Pusillus; albus, pileo carnosulo e campanulato expanso, umbonato, lævi, sericeo, stipite gracili, subfiliformi, flexuoso, subannulo, pro ratione amplo, membranaceo, erecto, fibrillis albis obsito; lamellis subliberis, ventricosis, confertis.

Somerset East (MacOw.). No. 1422.

Pileus 2-3 lin. latus, stipes $1\frac{1}{2}$ unc. altus, siccitate rufescens. Ab *Ag. parvannulato*, Fr., modo stipite tenuiore, longiore et annulo amplo differt.

Ag. (Tricholoma) ustalis, *Fr. Ep.*, 29.

In Pinetis umbrosis pr. Somerset East, raro (MacOw.). No. 1176.

Tricholomata quidem, præsertim limacina, siccitate nimium mutantur et hinc ægre determinantur; sed fungus noster ob. staturam mediocrem; pileum viscosum, carnosum, convexo-planum, umbrinum, stipitem æqualem, pallidiorem et lamellas rufescentes, fors non injuste ad Ag. ustalem, Fr., trahitur. In genere monendum est, Agaricos siccatos, in quibus subspeciem, tribum et sectionem discernere quidem licet; sed notæ subtiliores adeo obscuratæ sunt, ut ad condendam novam speciem non-sufficiant, in his pagellis, ad speciem proximam, notam, relatus esse.

Ag. (Tricholoma) Georgii, *Clus. Fr. Ep.*, 43.

In campis graminosis ad Somerset East (MacOw.). No. 1119.

Exceptis lamellis pallide carneis, totus albus, firmus. Lamellæ horizontales, sublineares, confertæ. Odor subnullus, sapor nucum avellanæ. *A. Caffris* editur. (MacOw. in sched.) Eundem etiam e Mongolia Chinaque boreali, ubi venalis est, habemus.

Ag. (Tricholoma) caffrorum, *K. et M. Cw.*

E. Trich. guttatis. Insignïs, circulos sæpe 60 pedum diam. formans. Pileus sæpe 12 uncialis, e convexo planiusculus, lævis, impolitus, albus; stipes solidus, subbulbosus, pollicem crassus, concolor; lamellæ latiusculæ, postice rotundato emarginatæ, albæ (nec carneæ), siccitate fuscidulæ. Sapor gratus, ostreatus, odor nullus. Edulis, sapidus (MacOwan in sched.).

In campis graminosis ad Somerset East (MacOw.). No. 1222.

Statura gigantea et pileo plerumque eumorpho, nec ungulæformi ab *Ag. gamboso* egregie differt.

var. **Sulonensis.**—Æque giganteus, edulis, albus; sed differens pileo subgibbo, margine involuto et stipite ovato bulboso, ad basim 2 unc. et ultra crasso, sursum valde attenuato, quo habitum alienum acquirit.

Somerset East (MacOw., *sine* No.).

Ag. (Clitocybe) amarus, *Fr. Ep.*, 60.

Inter dumeta. ad folia putrescentia, mont. Boschberg. (MacOw. et Tuck, No. 1013 et 1212.)

Ag. (Clitocybe) sinopicus, *Fr. Ep.* 69.

Somerset East (MacOwan.). No. 1371. "Aurantio-ruber lamellæ albidæ, flaventes."

Ag. (Clitocybe) trullæformis, *Fr. Ep.* 68.

In fol. deciduis, sub arboribus montis Boschberg ad Somerset East. (MacOw., No. 1249.)

"Pileus cinereus, lamellæ albæ, decurrentes." (MacOw. in sched.)

Ag. (Clitocybe) membranaceus, *Fr. Ep.* 65.
Ad Bazuja caffrariæ (Rev. Baur.).
Sat frequens videtur forma haec minor, exumbonata *Ag. infundibuliformis*, Schæff.

Ag. (Clitocybe) splendens, *Pers. Fr. Ep.* 70.
In dumetosis ad Somers. E. (MacOw., No. 1201.)
Ex hac stirpe plures adsunt formæ, inter *Ag. gilvum* et *Ag. flaccidum* vacillantes.

Ag. (Clitocybe) expallens, *P. Fr. Ep.* 74.
Inter folia putrida, sub fruticibus montis Boschberg. (Mac.Ow. et Tuck, No. 1217.) P. Natal (Wood, No. 395).

Ag. (Clitocybe) laccatus, *Schæff. Fr. Ep.* 79.
Somerset East. (MacOw., No. 1359, b.)

Ag. (Collybia) radicatus, *Relh. Fr. Ep.* 81.
Somerset East, in silvestribus. (MacOw., No. 1254.)

Ag. (Collybia) alveolatus, *Kalchbr.*
Species singularis, cum nulla alia confundenda, e foedere *Ag. radicati* et *Ag. longipedis.* Pileus carnosus, tenax, convexo-planus, leviter umbonatus, 3-4 centm. latus, in umbone rugis crispulis, nigricantibus ornatus, circa umbonem sulcis radiantibus, latis et profundis, marginem haud attingentibus exaratus, ceterum glaber, cervinus ; stipes solidus, gracilis, tenax, striatus, 10-15 centm. longus, 5 mm. crassus, basi ovato-fusiformis, radicatus, ibidemve 1-1½ centm. crassus, pileo subconcolor; lamellæ rotundato-adnexæ, confertæ, latiusculæ, albæ.
Somers. E. (MacOw., *sine* No.).
Pileo, in alveolos oblongos, radiantes exsculpto insignis; sedan hæc nota constans?

Ag. (Collybia) melinosarcus, *Kalchbr.*
Forma ad *Ag. fusipedem*, indumento stipitis ad *Ag. velutipedem* accedens. Solitarius vel gregarius, firmus, inodorus, rufo-vaccinus. Pileus carnosus, e convexo planus, vix umbonatus, pro ratione parvus, pollicaris et ultra, lævis, glaber, rufo-brunneus; stipes rigidus, tenax, farctus, extus eximie cartilagineus 3-8 centm. longus, 5-6 mm. crassus; e basi ventricosa radice fusiformi caudatus vel totus fusiformis, pulverulento-tomentosus, fulvo-ferrugineus. Lamellæ emarginato-sublibera, et secedentes, firmæ, distantes, pileo pallidiores ; caro flava.
In silvis, ad pedem montis Boschberg, 1874. (No. 1013.) Mac.Ow.

Ag. (Collybia) stridulus, *Fr. Ep.*, 85.
Specimina nostra omnino referunt fungum in Icon. sel. Friesii, tab. 62, fig. 2, depictum.
Somerset East. Boschberg (MacOw., No. 1160).

Ag. (Collybia) butyraccus, *Bull.*
Prom. B. sp. leg., (MacOw., No. 1365).

Ag. (Collybia) acervatus, *Fr. Ep.*, 92.
In truncis putridis, mont. Boschberg (MacOw., No. 1187).

Ag. (Collybia) dryophilus, *Bull. Fr. Ep.* 92.
Somerset East (MacOw., No. 1157, 1165, 1187, 1189). P. Natal (Wood, No. 192, 121, 349, 401).

Procul dubio, inter specimina, qua adsunt copiosa, plures latent species, sed in fungillis siccatis jam non distinquendæ.

Ag. (Collybia) extuberans, *Fr.*
P. Natal leg. Wood, No. 354.

Ag. (Collybia) chortophilus, *Berkl.* Hook, Lond. Journ., II., 1843, p 507. (Fung Uitenhage, No. 2.)
In stipulis emortuis graminum, inter dumeta aperta. Somerset East (MacOw., No. 1359). P. Natal (Wood, No. 121).

Ag. (Mycena) galeropsis, *Fr. Hym. eur.* 136. F. Icon. sel. t. 79, f. 1.
Somerset E. (MacOw., No. 1207).

Specimina nostra, ob stipitem arrhizum ad *Ag. galericulatum* haud referenda, cum icone Friesii citata bene congruunt.

Ag. (Mycena) sciolus, *K.*
Totus albus, pileo tenui convexo, umbone prominente acuto, circa umbonem depresso, ad marginem striato, 1-1½ centm. lato; stipite fistuloso, gracili, æquali 5-7 centm. longo 1 mm. crasso, viscoso (?), basi vix pubescente, lamellis ventricosis, latiusculis, distantibus.

Port Natal. Inanda, ad muros humidos stabuli cujusdam (J. M. Wood, No. 92, 388).

Ag. (Mycena) tintinabulum, *Fr.* Ep. I, p. 107; II, p. 140.
Pileo spadiceo, viscido; stipite pro ratione brevi, pallido, basi strigoso. Semel tantum lectus. (MacOw., *sine* No. .)

Ag. (Mycena) heliscus, *B. & Br.* Fung. of Ceylon, No. 128.
Pileo hemispherico, sulcato, plumbeo stipiteque capillari albo pruinosis; lamellis paucis, crassis, adnatis. (Berk. l. c.).

In ramulis putrescentibus montis Boschberg. (*sine* No.).

Ag. (Mycena) vitreus, *Fr. Ep.* iii.
"Pileo saturate cinereo, lamellis albissimus." MacOw. Somerset East in silvis (MacOw.).

Ag. (Mycena) debilis, *Fr. Ep.* 112.
Somerset East (MacOw.).

Ag. (Mycena) dilatatus, *Fr. Ep.* 117.
Forma lignatilis, stipite brevi, basi membrana orbiculari, alba cincto.

Somerset East (MacOw.).

Ag. (Mycena) capillaris, *Fr. Ep.* 119.
In ligno putrido, sub fruticibus, Boschberg (MacOw., Nos. 1041 et 1302).

Agaricus (Mycena) actiniceps, *K. & C.*
Pusillus, rufo-fuscus. Pileus ovatus, 1 mm. latus, fibrillis patentibus strigulosus; stipes filiformis, 4 mm. long., supra furfuraceo-granulosus, ad basim strigosus; lamellæ adscendentes, subliberæ, distantes, albæ.

In fol. emortuis ad Somerset East.

Ag. (Omphalia) syndesmius, *Kalchbr.*

Pileo membranaceo, convexo, leviter umbilicato, striatulo, vix 1 cent. lato, nudo, badio-fulvo; stipitibus fasciculatis, fistulosis æqualibus vel apice parum incrassatis, 5 cent. longis 2 mm. crassis, glabris, pileo subconcoloribus, basi tomento albo connexis; lamellis breviter decurrentibus, angustis, distinctis, pallidis.

A proximis *Ag. campanella* et *Ag. Laestadii*, abunde differt, lamellis pallidis et stipite basi nec nudo, nec fulvo, strigoso.

In ramulis humi jacentibus, ad Somerset East (MacOw., No. 1198).

Ag. (Omphalia) griseo-pallidus, *Desmaz. Fr. Ep.* I., *p.* 125, II., *p.* 161.

Si non idem, certe proximus.

In fol. putrescentibus ad Port Natal, leg. (Wood, No. 136).

Ag. (Omphalia) linopus, *K.*

Proximus *Ag. pyxidato*, sed gracilior, stipite filiformi, rufescente insignis. Pil. membranaceus, profunde umbilicatus, albido cervinus, lamellæ sat confertæ, eximie deccurrentes, pallidæ.

Somerset East. In silvis, Martio leg. (MacOwan., 1878, No. 1369).

Ag. (Omphalia) scyphiformis, *Fr. Ep.* I., *p.* 124, II., *p.* 159.

Semel lectus, ad quisquilias, sub arbustis, Boschberg, 1877 (*sine* No.).

Ag. (Omphalia) scyphoides, *Fr. Ep.* 122.

In graminosis mont. Boschberg, 4000 alt. (MacOw.).

Ag. (Omphalia) integrellus, *Pers. Fr. Ep.* I. *p.* 128, II. *p.* 165.

In cortice *Acaciæ horridæ* (MacOw.).

Ag. (Pleurotus) ostreatus, *Jacq. Fr. Ep.* 133.

In truncis putridis montis Boschberg (MacOw., 1083).

Ag. (Pleurotus) olearius, *DeC. Fr. Hym. Eur.* 170.

Ad truncos emortuos, in dumetis mont. Boschberg (MacOw. et Tuck, No. 1216).

Ob stipitem rhabarbarinum, sursum incrassatum, carnem flavam stationemque in lignis, indubie huc potius referendus, quam ad similem *Ag. Zizyphinum*, Viv.

Ag. (Pleurotus) sciadium, *K. et MacOw.*

Pileus carnosus, lateralis, postice immarginatus, flabelliformis, confluendo multiplex, lobatus, 4-7 centm. latus, basi in stipitem productus vel basi subangustata sessilis, floccosus, albo-slutaceus; stipes solidus, vix pollicaris, basi albo-floccosus; lamellæ decurrentes, passim furcatæ, confertæ, angustæ, albæ.

In lignis putrid. mont. Boschberg, alt. 4000 (MacOw. et Tuck, No. 1243).

var. **salmoneus.**— Lamellis aurantio-salmoneis et sporis carneis differt; stipiteque obsoleto, ad rudimentum reducto. Fors distincta species.

(MacOw., No. 1401.)

Ag. (Pleurotus) flabellatus, *B. et Br.* Fung. of Ceylon, No. 145.

Pileo albo tomentoso demum glabrescente, cinereo, margine incurvo. Stipite brevi tomentoso albo, lamellis albis (MacOw. in Sched.). Siccando ex cinereo-purpurfascens vel potius rufescens.

Pileus lateralis, 2-3 centm. longus latusve, basi angustatus, ad dimidium fere tomento floccoso vestitus, lamellæ angustæ, decurrentes.

In lignis putridis montis Boschberg Maj., 1879 (sim. 180), p. 187.

Ag. (Pleurotus) limpidus, *Fr. Ep.* 135.

In ramis dejectis. Boschberg (MacOw., No. 1052).

Ag. (Pleurotus) caveatus, *Berkl. et Curt.* Fung. of Cuba, No. 37.

Pileo albo vel pallide fusco, infundibuliformi leviter striato; stipite solido glabro excentrico, lamellis albis vel albidis, decurrentibus.

Pileus 2, latus $1\frac{1}{2}$-2, altus. Gregarius et cæspitosus. Affinis *Ag. commisibili*, B. et C., sed pileus multo magis depressus (B. l. c.).

In ligno putrescente debeatur (?) mont. Boschberg, vere pluviali, 1874, No. 1045. E. Natal, No. 1216.

Ag. (Pleurotus) aureo-tomentosus, *Kalch. in* "Grevillea" IX., *p.* 17.

P. Natal in lignis (J. M. Wood, Nos. 103, 348, 416).

Pileus 2-3 centm. latus, stipes 2-3 centm. longis, 1-2 mm. crassus, in pileum dilatatus. Tomentum intense luteum, ad verticem pilei et basim stipitis aureo-aurantiacum. Elegans hic fungillus, ob lamellas subdecurrentes et stationem epixylam. Pleurotis quidem adnumerandus videtur, sed inter hos propriorem affinem non habet. Stratum pilei tomentosum e fibris subcapitatis, ramosis, constat.

Ag. (Pleurotus) septicus, *Weinm. Fr. Ep.* 136.

Port Natal (Wood, Nos. 135, 191).

Ag. (Pleurotus) radiatim-plicatus, *K. l.*

Habitu *Ag. applicati*, Batsch., sed rufus, et ad maginem-plicis paucis (6-9) notatus. Lamellæ distantes, angustæ rufescentes.

Ad ramulos deciduos, m. Boschberg (MacOw.).

Ag. (Pleurotus) contrarius, *K.*

Pusillus, *Ag. septico* similis, sed evolutio contraria. Pileus nempe primo globosus, seminum Sinapis magnitudine, pallide carneus, albo pruinatus, stipitello subexcentrico, verticali, concolori insidet, quo sensim incurvato totus resupinatus. Lamellæ ad insertionem stipitis concurrentes, paucæ, latiusculæ, parce venosæ, siccitate carneae.

In ramulis siccis Boschberg (MacOw.).

Pileus explicatus 4-5 mm. latus, margine semper inflexo, stipitellus persistens. In affinibus pileus primo resupinatus est et demum stipitello evanescente sublateralis fit.

Ag. (Pleurotus) gilvescens, *K.*

Pileus membranaceus, resupinatus, parum reflexus, subreniformis, lævis, glaber, gilvus, vel sublateritius; stipitellus excentricus, curvatus, evanescens; lamellæ plicæformis, distantes, venoso-connexæ, concolores.

Port Natal (Wood, No. 332).

Pileus $\frac{1}{2}$-1 centm. latus.

Ag. (Pleurotus) atrocœruleus, *Fr. Ep.* 137.

In cortice vivo arborum frondosarum mont. Boschberg. Somerset East (MacOw., No. 1048).

In junioribus quibusdam etiam lamellæ atro-cœruleæ.

Ag. (Pleurotus) clusilis, *K.*

Pusillus, pileo tenui, membranaceo, resupinata-reflexo, margine incurvo lamellas adscondente, 3-4 mm. lato, leviter striato vel ruguloso, subpruinoso, carneo-rufescente. Radicula brevis, evanescens. Lamellæ paucæ (5-9) plicæformes, in puncto excentrico concurrentes, carneæ,

In cortice vivo variarum arborum, montis Boschberg (MacOw., No. 1038).

A proximo *Ag. perpusillo*, Fr., colore et margine pilei lamellas tegente distinctus.

Ag. (Pleurotus) perpusillus, *Weinm.*

P. Natal (Wood, No. 191).

Ag. (Volvaria) bombycinus, *Schœff. Fr. Ep.* 138.

Somerset E. Leg. et determ. (MacOwan, No. 1416). Specimina ampla, egregia.

Ag. (Pluteus) cervinus, *Scherff. Fr. Ep.* 140.

In truncis puvlidis (MacOw.).

Ag. (Entoloma) sagittæformis, *K. et C.*

Pileus carnosus, conico-campanulatus, in umbonem acutum productus, lævis, glaber (lividus?); stipes solidus, senio modo cavus, ventricosus et in radicem longam productus, hinc subfusiformis, fibrilloso-striatus; lamellæ emarginato-adnatæ, confertæ, roseae. Sporæ ovales, 6×4 mm. diam. roseae.

P. Natal (Wood, 344, 357).

Pil. 1-3 centm. latus, $1\frac{1}{2}$ cent. altus; stipes 4-5 cent. longus, supra basim 1 cent. crassus, sursum deorsumve ad 3-4 mm. angustatus, radice solida, glabra, 2-3 cent. longa auctus. Verticaliter sectus sagittam fere refert.

Ag. (Nolanea) castus, *MacOwan.*

Totus albus, pileo carnosulo, convexo, 1-2 centm. lato circa umbonem papillæformem depressus, ad marginem deflexum leviter striato, lævi, glabro, sicco; stipite fistuloso, subfiliformi, 2-3 centm. longo, curvato adscendente, nitidulo, glabro; lamellis attenuato-adnatis, antice dilatatis, ventricosis, confertis, e sporis demum carneis.

Inter frutices, in graminosis ad Somerset E. (MacOw., 1360).

Pileus nonnunquam albo-cinereus, centro obscurior. Adest etiam Var.

Ag. (Pholiota) unicolor, *Flor. Dan. Fr. Ep.* 170.
"Totus cinnamomeus; stipes glabriusculus, annulus distinctus, persistens; lamellæ latæ, adnexæ" (MacOw. in Sched.).
Ad ligna putrida, m. Boschberg, 1877 (*sine* No.).
P. Natal (Wood, No. 390).

Ag. (Pholiota) mycenoides, *Fr. Ep.* 170.
Somerset E. (MacOw., No. 1423).
Præter formam vulgarem adest etiam altera, robustior, ad. *Ag. togularem*, Bull., accedens.

Ag. (Pholiota) togularis, *Bull. Fr. Hym. Eur. p.* 216.
Somerset East (McOwan).

Ag. (Hebeloma) spoliatus, *Fr. Ep.* 142.
Somerset East (MacOw., No. 1388).

Ag. (Flamula) harmoge, *Fr. Ep.* 189.
Mediocris, colore inconsueto inter Sapineos insignis.
Pileus carnosus, convexus, subgibbus demumve explanatus, 3-8 centm. latus, siccus albido-alutaceus, marginem versus colore lilaceo quasi suffusus, squamis fibrosis, fulvo-ferrugineis ornatus; stipes solidus, tenax, sursum, rarius deorsum incrassatus, plerumque curvatus, 4-6 centm. longus, $\frac{1}{4}$-$\frac{1}{2}$ centm. crassus, fibroso striatus, sordide lividus; annulus fibrosus, lacerus, evanidus; lamellæ adnatæ, emarginatæ, subconfertæ, luteotæ, dein rubro-aurantiacæ demumve læte ferrugineæ. Caro firma, albida, in pileo cyanescens, in stipite flavescens.
In tecto tugurii cujusdam ad Somerset E. (MacOw., No. 1380).
Fungum hunc rarum, post Friesium, vix ab aliquo repertum etiam in Hungaria, observavimus. Color in disco pilei ærugineus sæpe deest, hinc fortuitus videtur.

Ag. (Flamella) tilopus, *K. et MacOw. Icon Tab. Fig.*
Pileo carnosulo, convexo-plano, leviter umbonata, $\frac{1}{2}$-2 centm. lato Pellicula viscosa, secernibili tecto pallide flavo; stipite tenui fistuloso, 3-7 centm. longo, 1-2 mm. crasso subæquali pileo concolori, squomulis fibrosis raris vestitus. Caro flavovirens. Lamellæ adnatæ confertæ, ferrugineæ.
Cæspitosus vel subfasciculatus, in terra circa truncos vel in ipsis truncio muscosis, *Ag. squamosa* proximus.
Somerset East (*sine* No.).

Ag. (Flammula) Janus, *B. et Br.* Fung. of Ceylon, No. 207.
Cæspitosus, sulfureus, pileo convexo, obtuso umbonatove, subcarnoso; stipite subaequali, fistuloso glabro; lamellis angustis e subfusco-ferrugineis (Brk. l.c.).
In lignis putridis, montis Boschberg, Mart., 1877 (No. 1013).

Ag. (Naucoria) arenicola, *Berkl.* l.c. Fung. in Uitenhage, No. 6.
Somerset East (MacOwan).
Stipite basi incrassato—ad morem *Ag. radicati*—et arenam conglobante, insignis.

Ag. (Naucoria) pediades, *Fr. Ep.* 197.
In stercore vetusto, inter gramina mont. Boschberg (MacOw., No. 1006 et 1377).

Cel. Berkeley inter fungos ad Uitenhage lectos sub No. 5, notat *Ag. semiorbicularem* ibidem in fimo vaccino lectum. Ad hunc nostrum quoque fungum referrem; ni stipite crassiore, humiliore, basi bulbilloso potius cum *Ag. pediade*, Fr., conveniret.

Ag. (Naucoria) pygmæus, *Bull. Fries Ep.* 194.
In quisquiliis silvarum ad Somerset E. (MacOw., No. 1310). P. Natal (Wood, No. 91).

Ag. (Naucoria) undulosus, *Jungh. Fr. Ep.* 109.
Somerset East, in mont. Boschberg, sub fruticibus (MacOw., No. 1223). P. Natal (Wood, No. 370).
Sporæ breviter ovatæ 0·006 × 0·004 mm.

Ag. (Galera) hypnorum, *Fr. Ep.* 207.
In silvis, mont. Boschberg, sub fruticibus (MacOw. No. 1213).

Ag. (Galera) tener, *Schæff. Fr. Ep.* 204.
Inter frutices ad Somerset E. (MacOw.). P. Natal (Wood).

NECTRIA DITISSIMA.

According to Hartig ("Unter. Förstbot. Inst. München," 1880, p. 145), a large part of the diseases to which forest trees are subject are due to the attacks of this parasitic fungus. It attacks *Fagus*, *Quercus*, *Corylus*, *Fraxinus*, *Carpinus*, *Alnus glutinosa*, *Acer campestre*, and *Acer pseudoplatanus*, *Tilia*, *Frangula*, *Padus*, and possibly also the apple. It almost always enters through wounds, especially those caused by hail, or by the puncture of an insect (*Agrilus viridis*); but in some cases lenticels appear to give the opportunity. The development of the mycelium takes place especially in the autumn. The portion of the bark attacked assumes a black colour. The mycelium is mostly intercellular, and from the extremities of the excessively fine hyphæ are abstricted minute conidia resembling schizomycetes. These are not, however, known to serve for the propagation of the fungus, but bring about the rapid destruction of the cortical tissue. The medullary rays, wood parenchyma, and vessels are also attacked by the mycelium, causing a brown colour in the wood to the depth of a few millemetres. In damp weather, especially in September and October, the fertile cushions make their appearance, producing first conidia and then small red perithecia, the result of an act of impregnation that has not yet been accurately followed.—*Journ. Roy. Micr. Soc., Feb.*, 1881, *p.* 85.

SCHIMPER'S MOSSES.

Our Bryological readers will be glad to learn that the splendid collection of European mosses, which were contained in Schimper's herbarium, and which were transferred by the liberality of the Baroness Burdett Coutts to the Herbarium of the Royal Gardens, Kew, have been in course of arrangement, and are now eligible for consultation by those interested in the subject. Including, as this collection does, the herbarium of Bruch, all the types of Bruch and Schimper are accessible to those who are interested in the labours of the learned authors of the "Bryologia Europæa."

PRESERVATION OF FUNGI.

Some years ago, when Mr. James English, of Epping, first exhibited his specimens of the fleshy fungi, as preserved by him, by means of a new method, so as to retain much of their natural appearance, there was considerable curiosity amongst fungologists as to the secrets of the process. Some suggested one thing and some another, but no one produced similar specimens. As time progressed the process was improved, and there still seems to have been an anxiety amongst some to know how it was accomplished. At length Mr. English has announced that having been often applied to for details of his method, he has at length resolved to communicate it for a consideration. That is, he is prepared to print and publish a full account of his process, with all the requisite information, by subscription. If a sufficient number of persons will subscribe, or send in their names as subscribers, to his manual, at the subscription price of five shillings, he will print it as soon as the requisite number are obtained. This must be considered as a reasonable proposition. He says, justly, that the experiments caused him much anxiety, and entailed expense and great loss of time, and he cannot be expected, in addition, to speculate on the publication of his method, and invest money in printing, without a reasonable guarantee that he shall not be out of pocket. He considers that the only eligible course for him to pursue is to give those who desire to obtain the information the opportunity of doing so by means of a list of subscribers, as by this plan he will learn what encouragement there will be for him to publish his manual, and how far he will be justified in taking that step.

Having consented to explain these circumstances, we now leave the subject in the hands of our readers, with the intimation that all further particulars may be obtained by communication with Mr. James English, Naturalist, Epping, Essex.

NECTRIA CUCURBITULA.

The fir trees of Upper Bavaria have been attacked during recent years by a fungus which penetrates the bark, chiefly through injuries caused by hail or the weight of snow, or still more by a microlepidopter *Grapholitha pactolana*. Hartig states that the mycelium develops mainly in the sieve tubes ("Unters. Förstbot. Inst. München," 1880, p. 58), but also in the cortical tissue, and only in the spring; its development in summer is arrested by the want of water in the substratum. The fertile layer appears principally near the base of the stem, where there is a more abundant supply of moisture, in the summer and autumn, as cushions, at first white, afterwards reddish, which break through the bark, and detach, firstly, conidia and subsequently red perithecia, the latter probably the result of impregnation. The ascospores are two-chambered, ripen in the winter, and produce on germination a mycelium, on which conidia are again formed in various ways, sometimes directly, sometimes on special shoots. The development of the mycelium and the formation of the conidia can be followed out in a drop of turpentine. The growth of the parasite destroys the bark and cambium; the tree dying as soon as the mycelium has grown completely round the stem.—*Journ. Roy. Micr. Soc., Feb.*, 1881, *p.* 84.

AGARICUS (FLAMMULA) CARBONARIUS.

This Agaric made its appearance on burnt ground in Kew Gardens, during the month of November last. In some places it was accompanied by *Cantharellus carbonarius*, A. & S. In the next, and early part of the following month, very fine specimens, five to six inches high, and three inches in diameter, appeared. Up to the present time (the close of February) they have appeared in succession for three months, without intermission, through the severe frosts, which reached 23 or 24 degrees, without putting a stop to their development. It is a noteworthy circumstance that one well-determined Agaric has flourished continuously for three months, and survived nights of intense frost. *Agaricus (Collybia) velutipes* is also still to be found, but it did not appear until long after *Ag. carbonarius* had commenced growth, and the specimens have been small. Although it has generally been admitted that *Ag. velutipes* is uninjured, and perhaps improved, by a little frost, I was not prepared to find a *Flammula* resisting 24 degrees with apparent comfort.

M. C. C.

BRITISH MOSS FLORA.

Dr. Braithwaite is still pursuing the even tenour of his way with his excellent illustrations of British Mosses. The *Polytrychaceæ* filled the last part, and it is to be hoped that he will receive all possible encouragement to proceed as rapidly as he can with this useful work.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

NEW BRITISH FUNGI.

By M. C. Cooke.

(Continued from p. 95.)

The following are a portion of the additions described in their last paper by Messrs. Berkeley and Broome.

Agaricus (Amanita) nitidus, *Fr.* Hym. Eur., p. 24.

Pileus convex, then plane, firm, beset with thick, angular, indurated, darker warts; margin quite even, flesh white; stem stuffed, conically attenuated, squamose; ring torn, fugacious; gills white. *Fr. Icon.* t. 12 f. 1. *B. & Br. Ann. Nat. Hist.*, No. 1833.

In shady woods. Mattishall (Rev. J. M. DuPort).

"Several specimens have been forwarded, some exactly agreeing with the definition of Fries in the thick indurated angular warts, while others approach so near to *A. Mappa*, that it is difficult to distinguish them." *M. J. B.*

Agaricus (Lepiota) granulosus, *Batsch. var.* **rufescens.**

"A curious form was found near Bristol, by Mr Bucknall, quite pure white at first, then partially turning red, and in drying acquiring everywhere a rufous tint." *B. & Br. Ann. Nat. Hist*, No. 1834.

Agaricus (Lepiota) Bucknalli, *B. & Br. Cooke Illus. t.* 19, *f.b.*

Strong smelling. Pileus campanulate then convex, white, as well as the lower part of the stem sprinkled with lilac powder, gills white, scarcely reaching the margin. *B. & Br. Ann. Nat. Hist.*, No. 1836. *Ag. seminudus*, var. *lilacinus*, Quelet. Clavis Hym., p. 6.

On the ground. Clifton (Mr. Bucknall).

Pileus nearly an inch across; stem 3in. high. Odour strong of gas tar. Spores ·007 × ·0025 mm. Those of *Ag. seminudus* ·0035 × ·0018 mm. We have the authority of M. Quelet that it is his variety *lilacinus* of *Ag. seminudus.*

Agaricus (Armillaria) focalis, *Fr.* Hym. Eur., 40.

Pileus fleshy, soft, convex then plane, obtuse, cuticle silky, becoming smooth, ring broad, oblique ; stem solid, equal, breaking with a fibrous fracture; gills nearly free, crowded, narrow, white, becoming pallid. *Cooke Illust.*, t. 31. *B. & Br. Ann. Nat. Hist.*, No. 1837.

On bare ground, under old laurel trees. Coed Coch.

" Pileus 4 inches across, pale fawn coloured, darker above, slightly virgate, extreme margin involute; stem 5 inches high, 1½in. thick at base, variously lacerated ; mycelium white, fibrillose, ring very broad (to which the specific name alludes) superior. Odour farinaceous; substance tender. Almost agreeing in dimensions with the var. *Goliath*, and certainly one of the finest British species." *B. & Br.*

Figured in Cooke's Illustrations, pl. 31. The pileus rather too darkly coloured.

Agaricus (Tricholoma) stans, *Fr.* Hym. Eur., 52.

Pileus compact, convex, then flattened, viscid, smooth (neither granulated nor spotted), becoming reddish, flesh reddish beneath the cuticle ; stem solid, nearly equal, squamulose ; gills rounded, crowded, white, spotted with red. *Fr. Icon.*, t. 28. *B. & Br. Ann. Nat. Hist.*, No. 1838.

On the ground. Coed Coch.

" This species was formerly called by Fries *A. pessundatus*, and was found of large size at Coed Coch. The figure in the ' Icones ' marked '*pessundatus*' is now referred to *A. stans*. The true *A. pessundatus* was sent by Mr. Renny from Lucerne." *B. & Br.*

Agaricus (Tricholoma) guttatus, *Schœff. Ic. t.*, 240.

Pileus fleshy, convex, then flattened, cinnamon or ashy grey, dry, breaking in granular or floccose scales, margin remotely sulcate, at first involute, floccose ; stem solid, mealy white ; gills emarginate with a decurrent line, much crowded, snowy white. *Fr., Hym. Eur.*, p. 54. *B. & Br. Ann. Nat. Hist.*, No. 1839.

On the borders of woods. Downton.

Taste bitter, rather acrid. Pileus 3-5in. broad.

Agaricus (Tricholoma) tumidus, *Fr.* Hym. Eur., 61.

Rigid, fragile ; pileus bullate then expanded, undulate, rather shining, then cracked and split, cinereous ; margin thin, broken ; stem solid, rooting, swollen, striate, white ; gills marginate, broad, somewhat distant, white, becoming reddish-grey. *Kromb.*, t. 72, f. 1-5. *B & Br. Ann. Nat. Hist.*, No. 1840.

In moist pine woods. Coed Coch.

" Exactly according with Krombholz's figure." *B. & Br.*

Agaricus (Tricholoma) lixivius, *Fr.*

" There is no doubt that Sowerby's *A. compressus* is this species." *B. & Br.*

Agaricus (Clitocybe) hirneolus, *Fr.* Hym. Eur., p. 82.

Pileus rather fleshy, convex, plane, even, smooth, with a silky lustre; disc at length depressed, margin involute, very thin ; stem

stuffed, tough, slender, slightly flexuous, powdered with white at the apex; gills rather decurrent, crowded, becoming hoary. *Fr. Icon.*, t. 48, f. 3. *B. & Br. Ann. Nat. Hist.*, No. 1841.

Amongst moss. Coed Coch.

Stem 1-2in. Pileus 3-5 lines.

Agaricus (Clitocybe) amarus, *Fr.*

B. & Br. Ann. Nat. Hist., No. 1842. *Cooke* in "Grevillea" viii., p. 74.

Agaricus (Clitocybe) pithyophilus, *Fr.* Hym. Eur., p. 87.

White, pileus fleshy, thin, nearly plane, umbilicate, smooth, becoming pallid, stem somewhat hollow, terete then compressed, smooth (with a white downy base); gills adnate decurrent, crowded, plane, always white. *B. & Br. Ann. Nat. Hist.*, No. 1843.

In pine woods. Coed Coch.

Agaricus (Clitocybe) cryptarum, *Letellier.*

Densely cæspitose. Pileus somewhat conical, depressedly floccose, spotted with brown; stem white, rather striate, virgate, attenuated upwards, more or less compressed, narrowly fistulose; gills narrow, arcuate, rather decurrent, white. *B. & Br. Ann. Nat. Hist.*, No. 1844.

On sawdust. Coed Coch.

"Habit that of *A. tumulosus*. Pilei varying much in size, according to the denseness of the clusters. Inodorous, insipid; stem mottled within." *B. & Br.*

Agaricus (Clitocybe) decastes, *Fr.* Hym. Eur., 90.

Pileus convexo-plane, undulate, rather umbonate, even, smooth, of one colour, growing pale; disc compact, rather umbonate, stem solid, smooth, pruinose above, and white; gills rounded, adnate, crowded, rather wavy, white. *Fr. Icon.*, t. 52. *B. & Br. Ann. Nat. Hist.*, No. 1845.

On sawdust. Coed Coch.

"Agreeing closely with the figure of Fries in the 'Icones,' but we are doubtful whether what we find is not an advanced stage of *A. cryptarum*—a matter which requires future observation." *B. & Br.*

Agaricus (Clitocybe) Trogii, *Fr.* Hym. Eur., p. 85.

Pileus fleshy, compact, convex then expanded, obtuse, smooth, cinereous white, opaque; stem solid, firm, short, thickened at the base, villous; gills rather decurrent, crowded, white. *B. & Br. Ann. Nat. Hist.*, No. 1846.

In woods. Coed Coch.

The colour approaching that of *A. metachrous*. Very fragrant.

Agaricus (Clitocybe) senilis, *Fr.* Hym. Eur., p. 98.

Pileus between fleshy and membranaceous, funnel shaped, smooth, concentrically scarred, tan coloured, margin patent, stem solid, equal, smooth, whitish; gills long decurrent, linear, crowded, at length of the same colour as the pileus. *Fr. Icon.* t. 56, f. 1. *B. & Br. Ann. Nat. Hist.*, No. 1847.

In pine woods. Coed Coch.

"We are bound to say that the specimens shown to us at Coed Coch as belonging to this species, appeared to belong rather to *Ag. brumalis*, and did not agree with the figure in the 'Icones' in several particulars." *M.C.C.*

Agaricus (Collybia) macilentus, *Fr.* Hym. Eur., 123.

Pileus rather fleshy, nearly plane, obtuse, even, smooth; stem delicately fistulose, tough, naked, rooting; gills free, seceding, crowded, linear, yellowish. *Fr. Icon.* t. 66, f. 1. *B. & Br. Ann. Nat. Hist.*, No. 1848.

In pine woods. Coed Coch.

Agaricus (Collybia) stolonifer, *Jungh.*

Pileus rather fleshy, nearly plane, obtuse (slightly depressed), smooth, margin striate; stem hollow, equal, smooth, becoming tawny, root creeping like a stolon; gills rounded adnexed, ventricose, somewhat distant, whitish. *Fl. Dan.* t. 2021, f. 2. *B. & Br. Ann. Nat. Hist.*, No. 1848, bis.

Amongst fir leaves. Perth (Dr. Buchanan White).

Agaricus (Mycena) Adonis, *Bull.*

The scarlet form. *B. & Br. Ann. Nat. Hist.*, No. 1849.

Garthewin (Mrs. B. Wynne).

Agaricus (Omphalia) hydrogrammus, *Fr.* Hym. Eur., p. 154.

Pileus rather membranaceous, umbilicate, flaccid, smooth, livid, hygrophanous; margin patent, striate, somewhat undulate; stem hollow, smooth, rather compressed, rooting; base clad with whitish hairs; gills decurrent, much crowded, whitish. *Fr. Icon.*, t. 71; *B. & Br. Nat. Hist.*, No. 1850.

Among beech leaves. Coed Coch.

Agaricus (Omphalia) infumatus, *B. & Br.*

Pileus obtuse, not membranaceous, greenish, then smoky; stem thin, yellow; gills few, broad, decurrent, distant, yellow, *B. & Br. Ann. Nat. Hist.*, 1851.

On bark, amongst moss. Garthewin.

"Pileus 2in. across; stem 1 line high, not a line thick, dilated at the base, tomentose, especially below; gills about twelve, with smaller intermediate. Allied to *A. umbelliferus*, but quite distinct from all its varieties." *B. & Br.*

Agaricus (Omphalia) offuciatus, *Fr.* Hym. Eup., p. 156.

Pileus somewhat fleshy, plano-depressed, obtuse, even, smooth, reddish, growing pale; stem hollow, tough, straight; gills decurrent, thin, crowded, of the same colour. *Fr. Icon.*, t. 72, f. 3; *B. & Br. Ann. Nat. Hist.*, No. 1853.

In beech woods. Coed Coch.

Stem 2in. long, 1-2 line thick, with the habit of *Ag. dryophilus*.

Agaricus (Omphalia) abhorrens, *B. & Br.*

Odour of dung. Pileus umbilicate, brown; stem slender, of the same colour; gills decurrent. *B. & Br. Ann. Nat. Hist.*, No. 1853.

On lawn. Coed Coch.

Agaricus (Pleurotus) laurocerasi, *B. & Br.*

Oyster-shaped. Pileus sulcate, brown, with a very thin cuticle; stem obsolete; gills connected by veins; spores ovate. *B. & Br., Ann. Nat. Hist.*, No. 1854.

On the naked trunk of a laurel. Coed Coch.

"Pileus rather more than an inch across; the cuticle is extremely thin, and gives way at the furrows so as to expose the substance of the pileus. Spores ·0008 mm. long." *B. & Br.*

Agaricus (Pleurotus) palmatus, *Bull.*

"The spores of this species are pale ochre-coloured, ·0004in. (·01 mm.) in diameter; it has the same right to be placed in *Pleurotus* as the rosy-spored *A. euosmus*." *B. & Br. Ann. Nat. Hist.*, No. 1855.

Agaricus (Pluteus) spilopus, *B. & Br.*

Dwarf. Pileus brown, rugulose; stem flexuous, punctate with black; spores globose, even. *B. & Br. Ann. Nat. Hist.*, No. 1856.

On wood (?). (*C. E. Broome.*)

"Allied to *A. nanus*."

Agaricus (Leptonia), æthiops, *Fr.* Hym. Eur., p. 202.

Pileus rather fleshy, plano-depressed, without striæ, shining, black, then smoky, smooth, but clad with innate fibrils; stem stuffed, thin, smooth, tawny, becoming black, punctate with black above; gills adnate, whitish, with the edge of the same colour. *B. & Br. Ann. Nat. Hist.*, No. 1857.

In grassy places. Coed Coch.

Agaricus (Eccilia) atrides, *Fr.* Hym. Eur., p. 212.

Pileus somewhat membranaceous, plane, deeply umbilicate, striate, virgate with black; stem fistulose, punctate with black above, pallid; gills deeply decurrent, attenuated behind, rather crowded, pallid, edge black and toothed. *B. & Br. Ann. Nat. Hist.*, No. 1858.

In moist woods. Hereford.

"This is not the plant figured by Quelet." *B. & Br.*

Agaricus (Acetabularia) acetabulosus, *Sow. t.* 303.

Berk. & Br. Ann. Nat. Hist., No. 1859.

"This curious species has never been satisfactorily elucidated. The occurrence of an allied form from Swan River necessitates the proposition of a new section (*Acetabularia*), analogous to *Volvaria* and *Chitonia*. The spores in the original specimen of Sowerby, now (with the drawing) in the British Museum, are clay-coloured." *B. & Br.*

Agaricus (Pholiata) erubius, *Fr.* Hym. Eur., p. 216.

B. & Br. Ann. Nat. Hist., No. 1860. Agaricus (Pholiota) Leveillianus, *D. & M.*, in Cooke's "Handbook," p. 110.

"This is clearly the same species with *A. denigritus*, the spores of which are brown." *B. & Br.*

Agaricus (Pholiota) ombrophilus, *Fr.* Hym. Eur., p. 216.

Pileus fleshy, convex, then plane, even, smooth, ferruginous, hygrophanous; stem hollow, fibrillose, striate, pallid; ring entire, distant; gills adnate, seceding, ventricose, clay-coloured, then ferruginous. *Fr. Icon.*, t. 103; *B. & Br. Ann. Nat. Hist.*, No. 1861.

In grassy places. Coed Coch.

Sporadic. Pileus 3in., stem 3-5 lines thick.

Agaricus (Pholiota) subsquarrosus, *Fr.* Hym. Eur., p. 221.

Pileus fleshy, convex, viscid, ferruginous brown, with darker adpressed floccose scales; stem stuffed, equal, ferruginous yellow, darker adpressed scales terminating in an annular zone; gills nearly free, crowded, yellow, then dirty tan colour. *B. & Br. Ann. Nat. Hist.*, No. 1862.

On trunks and the ground. Hereford (*T. Howse*).

Agaricus (Pholiota) tuberculosus, *Fr.* Hym. Eur., p. 223.

Pileus fleshy, convexo-plane, obtuse, dry, broken up into innate, adpressed scales; stem hollow, incurved, short, bulbous, fibrillose, ring rather membranaceous, deciduous; gills emarginate, broad, serrulate, yellowish or cinnamon. *B. & Br. Ann. Nat. Hist.*, No. 1863.

On sawdust. Coed Coch.

Agaricus (Pholiota) curvipes, *Fr.* Hym. Eur., p. 223.

Pileus rather fleshy, convex, then expanded, torn into adpressed floccose scales; stem somewhat hollow, thin, incurved, as well as the ring fibrillose, with radiating flocci; gills adnate, broad, white, then yellowish, at length tawny. *B. & Br. Ann. Nat. Hist.*, No. 1864.

On sawdust. Coed Coch.

Agaricus (Inocybe) muticus, *Fr.* Hym. Eur., 230.

Pileus fleshy, convex, then plane, very obtuse, and at length depressed in the centre, squamulose, whitish, with tawny fibrils; stem hollow, attenuated downwards, fibrillose, white, straw-coloured, or tawny; gills adnate, crowded, thin, white, then becoming tawny. *Fr. Icon.*, t. 109; *B. & Br. Ann. Nat. Hist.*, No. 1865.

On roadsides. Coed. Coch.

Pileus 1-2in., stem 1½in. long, 3-4 lines thick.

Agaricus (Inocybe) destrictus, *Fr.* Hym. Eur., p. 232.

Pileus fleshy, campanulate, then flattened, umbonate, rimose, fibrillose, then torn into scales, pallid, becoming reddish; stem solid, smooth, fibrillose, striate, white, becoming reddish; gills adnate, with a tooth, crowded, whitish, then greyish cinnamon. *Fr. Icon.*, t. 108; *B. & Br. Ann. Nat. Hist.*, No. 1866.

In pine woods. Coed Coch.

Flesh thin, white; odour unpleasant.

FUNGI ON EUCALYPTUS.

By M. C. Cooke and H. W. Harkness.

The following enumeration of Fungi found upon *Eucalyptus globulus*, by Dr. H. W. Harkness, were all collected in California:—

Agaricus (Mycena) sacchariferus, *B. & Br.*
On bark of *Eucalyptus.* (No. 2035.)

Pistillata ovata, *Fr.*
On rotting leaves of *Eucalyptus.* (No. 2198.)

Corticum epiphyllum, *P.*
On rotting leaves of *Eucalyptus.* (No. 2014.)

Sphæronema eucalypti, *C. & Hk.*
Peritheciis sparsis, erumpentibus, conicis, atris. Sporis minoribus, subcylindricis, leniter curvulis, hyalinis, utrinque obtusis, (·008 × ·002 mm.).
On bark of *Eucalyptus.* (No. 2145.)

Cryptosporium ceuthosporoides, *Cke. & Hk.*
Peritheciis deplanatis, fuscis, ceuthosporoideis, demum superne fissuratis. Sporis fusiformibus, curvatis, hyalinis (·018-02 × ·003 mm.).
On dead leaves of *Eucalyptus.* (No. 2005.)
Habit resembling that of *Ceuthospora phacidioides.*
Thumen has described a *Phyllosticta eucalypti* from Portugal, not at present found in this locality.

Sphæropsis Mollerianum, *Thum., in Myc. Univ.*
On dead leaves of *Eucalyptus.* (No. 2037.)

Diplodia eucalypti, *Cke. & Hk.*
Sparsa, tecta, demum erumpens. Peritheciis carbonaceis, globosis, atris. Sporis ellipticis, brunneis, uniseptatis, medio leniter constrictis (·022 × ·009, vel ·025 × ·012, vel ·03 × ·011 mm.).
On bark of *Eucalyptus.* (No. 2000.)
The spores differ in size and proportions on younger and older twigs and branches, but it is difficult to find any specific differences in the three forms of which the measurements of the spores are given. Not identical with *Diplodia Molleriana*, Thum.

Diplodia tenuis, *Cke. & Hk.*
Peritheciis sparsis, globosis, obtusis, membranaceis, atris, dein prominulis. Sporis ellipticis, uniseptatis, hyalinis (·012 × ·004 mm.).
On decayed bark of *Eucalyptus.* (No. 2195.)

Diplodia microspora, *Sacc.*
On inner bark of *Eucalyptus.* (No. 2196.)

Hendersonia eucalypti, *Cke. & Hk.*

Peritheciis in maculas orbicularibus collectis, immersis. Sporis ellipticis, infra attenuatis, hinc subclavatis, triseptatis, fuscis (·02 × ·006 mm.).

On twigs of *Eucalyptus.* (Nos. 2150, 2200, 2149.)

On dead leaves. (No. 2039.)

Spores exuding and staining the matrix, the perithecia more scattered when growing on twigs and spores, darker, but not differing in form or size.

Hendersonia coryneidea, *Cke. & Hk.*

Peritheciis sparsis, tectis, dein stellato-fissuratis. Sporis magnis, lanceolatis, 5-7 septatis, loculis ultimis hyalinis, aliis olivaceo-fuscis (·05 × ·01 mm.).

On twigs of *Eucalyptus.* (No. 2012.)

Spores resembling those of *Coryneum*, but enclosed in a perithecium.

Pestalozzia truncatula, *Fckl.*

On bark of *Eucalyptus.* (No. 2034.)

Pestalozzia monochæta, *Desm.*

On fading leaves of *Eucalyptus.* (No. 2155.)

Pestalozzia funerea, *Desm.*

On twigs of *Eucalyptus.* (No. 2002.)

Harknessia eucalypti, *Cke.*

On twigs and leaves of *Eucalyptus.* (Nos. 2030, 2031.)

Melanconium globosum, *Cke. & Hk.*

Discoideum, erumpens, atrum. Sporis globosis, atro-fuscis (·01-·011 mm.).

On twigs of *Eucalyptus.* (No. 2041.)

Stilbospora angustata, *Pers.* var.

Inside bark of *Eucalyptus.* (No. 1999.)

Septonema multiplex, *B & C.*

On bark of *Eucalyptus.* (Nos. 2011, 2046.)

Fusarium eucalyptorum, *Cke. & Hk.*

Roseum vel cinnabarinum, convexum, oblongum vel confluens. Sporis fusiformibus, utrinque acutis, curvatis, hyalinis, 5-septatis (·05 × ·004 mm.)

On bark of *Eucalyptus.* (Nos. 2021, 2199.)

Fusarium mesentericum, *Cke. & Hk.*

Aurantium vel aurantio-rubrum, oblongum, convexum, in maculo mesenteriformi confluens. Sporis cylindricis, utrinque obtusis, leniter curvulis, continuis, hyalinis (·018-·02 × ·0045 mm.).

On bark of *Eucalyptus.* (No. 2020.)

Volutella coronata, *Cke. & Hk.*

Sparsa, alba, globosa, substipitata (·15 mm. diam.). Stipite curto, crasso (·06 mm. long, ·08 mm. crass.). Sporis ellipticis (·006 × ·003 mm.) hyalinis. Setis (circa 12) septatis, aculeatis, hyalinis (·35 mm. long.)

On twigs of *Eucalyptus.* (No. 1984.)

Tubercularia eucalypti, *Cke. & Hk.*
Epiphylla, erumpens, convexa, atra, nitida. Hyphis tenuis, breviter ramosis. Sporis cylindricis, obtusis, rectis vel curvulis, continuis, hyalinis (·01 × ·002 mm.).
On dead leaves of *Eucalyptus.* (No. 2040.)
No. 2144 is probably a condition of the same thing, but pezizæform.

Fusidium albocarneum, *Cke. & Hk.*
Effusum, maculæforme, albocarneum. Sporis fusoideis, rectis, continuis, hyalinis (·018-·02 × ·0025 mm.).
On dead leaves of *Eucalyptus.* (Nos. 2027, 1998).
Somewhat like *F. griseum* in habit, but differing in colour.

Penicillium glaucum, *Lk.*
On decaying leaves of *Eucalyptus.* (No. 2152.)

Coremium glaucum, *Link.*
On twigs of *Eucalyptus.* (Nos. 2022, 2048.)

Polyactis fusca, *Cke. & Hk.*
Læte fusca, floccosa. Hyphis elongatis, parce ramosis, supra hyalinis, infra fuscis, ramulis terminalibus brevissimis deciduis. Sporis globoso-ovatis (·009 × ·0075 mm.) hyalinis.
On twigs of *Eucalyptus.* (Nos. 2028, 2044.)

Menispora hyalina, *Cke. & Hk.*
Effusum, albidum. Hyphis tenuis, erectis, hyalinis. Sporis ad apicem fasciculatis, cylindricis, rectis vel leniter curvulis, utrinque rotundatis, continuis, hyalinis (·014-·016 × ·002 mm.).
On dead wood of *Eucalyptus*, mixed with a green Alga. (No. 2159.)
Hardly conformable with the usual character in this genus ; the threads are very delicate and colourless, but the spores are clustered at the apices of the threads.

Monilia virido-flava, *Cke. & Hk.*
Cæspitulæ hemisphericæ, virido-flavæ. Hyphis repentibus, laxe ramosis, ramulis assurgentibus, hyalinis. Sporis concatenatis, globosis (·0035 mm.) hyalinis.
On dead *Eucalyptus* leaves. (No. 2163.)
Tufts 1-2 mm. broad, then confluent. Spores in chains at the tips of the branchlets.

Septosporium scyphophorum, *Cke. & Hark.*
Effusum, atrum. Hyphis erectis, flexuosis, nodulosis, hinc illic scyphæ-formibus ; sporis ellipticis, obtusissimis, merenchymaticis, atro-olivaceis (·02-·04 × ·016-·018 mm.)
On bark of *Eucalyptus.* (No. 2019.)
Threads closely resembling those of *Cladotrichum scyphophorum*, Ca.

Peziza luteo-rubella, *Nyl.*
On *Eucalyptus* bark. (No. 2008.)

Peziza (Mollisia) carneo-rosea, *Cke. & Hark.*
Discoidea, sessilis, carneo-rosea, subcarnosa ($\frac{1}{3}$ mm. diam.). Ascis cylindraceis. Sporidiis ellipticis (·005 × ·003 mm.) Paraphysibus linearibus.
On twigs of *Eucalyptus.* (No. 2164.)

Peziza (Dasyscypha) rufo-olivacea, *A. & S.*
On twigs of *Eucalyptus.* (No. 2017.)

Peziza (Dasyscypha) cerina, *P.*
On *Eucalyptus* bark. (No. 2026.)
No. 2147 is a Lichen.

Dermatea eucalypti, *Cke. & Hark.*
Parva, erumpens, carnea, cupulis subsessilibus, solitariis, extus obscurioribus ($\frac{1}{3}$ mm.). Ascis clavatis. Sporidiis subfusoideis utrinque obtusis (·02-·03 × ·01-·012 mm.), quadrinucleatis, dein pseudo-triseptatis, hyalinis. Paraphysibus flavidis.
On *Eucalyptus.* (No. 2148.)

Propolis versicolor, *Fr.*
On old bark of *Eucalyptus.* (No. 2004.)

Stictis radiata, *Fr.*
On *Eucalyptus* bark. (No. 2024.)

Hysterium pulicare, *Fr.*
On bark of *Eucalyptus.* (No. 2143.)
No. 2158 is a *Hysterium* without fruit, on leaves of *Eucalyptus.*

Hypocrea consimilis, *Ellis.*
On decorticated *Eucalyptus.* (No. 2038.)

Valsa eucalypti, *Cke. & Hk.*
On twigs of *Eucalyptus.* (Nos. 2016, 2033, 2157.)

Lasiosphæria ovina, *(P.)*
On decorticated *Eucalyptus.* (No. 2166.)

Sphæria mutila, *Fr.* var. **Eucalypti.**
On twigs of *Eucalyptus.* (No. 2013.)

Sphæria recedens, *Niessl. in Thum. Myc. Univ., No.* 1748.
On bark of *Eucalyptus.* Portugal.
It may be mentioned here the difficulty which we have experienced in determining what is the species which Niessl had in view. Our copy, as well as another which we examined, contains a *Sphæria* with asci one-tenth of a millemetre long, and biseriate, hyaline, narrow, fusiform uniseptate sporidia, breaking easily at the septum. The sporidia are ·018-·02 × ·003 mm. This is *not* the *Sphæria* of the description which has "asci ·18-·25 mm. long," and "sporidia cylindrical, unicellular, hyaline, ·005 mm. long, and scarce ·001 mm. wide." If the description is accurate, then are the specimens published quite a distinct species, and should have another name. It is much to be regretted that published types are not more accurate.

FUNGI MACOWANIANI.

By Rev. C. Kalchbrenner.

(Continued from p. 116.*)*

Ag. (Crepidotus) pogonatus, *K.*

Pileis e resupinato reflexis, ochraceis, mycelio byssoideo, late effuso, albido-ochraceo insidentibus; lamellis in puncto excentrico concurrentibus, latiusculis, carneo-ochraceis, acie dilutioribus. Sporæ minutæ, subglobosæ.

In ramis emortuis, humi jacentibus mont. Boschberg ad Somers. E. (MacOw., No. 1075).

Pileus $\frac{1}{2}$-1 cent. latus, estrius. *Ag. epicrocino*, B. et Br. (Fung. of Ceyl., No. 257), proximus et fors hujus varietas.

Ag. (Crepidotus) applanatus, *P. Fr. Ep.* 210.

In ligno humido, fabrefacto, vites hortorum fulciente. Somers. E. (McOw. No. 1202).

Ag. (Psalliota) silvaticus, *Schæff. Fr. Ep.* 214.

Somerset E. (MacOw., Nos. 1192, 1432).

Stipes gracilis, æqualis; caro tenuis rufescens.

Ag. (Psalliota) pratensis, *L.* var. **Australis,** *Berk. Fung. Uitenhage, No.* 9.

In acervis destructis formicarum. Somerset E. (MacOw., No. 1421).

Speciosus, amplus, pileo ovato-hemispherico, albo, in squamas latas, polygonales, concolores diffracto insignis, siccitate flavescens, sed ob lamellas postice rotundatas, cinereas demumve umbrinas certe huc referendus, licet a descriptione Berkeleyi l. c. in quibusdam differat,

Ag. (Psalliota) campestris, *L. Fr. Ep.*, 213.

Somers. E. Boschberg, 2500′ altid., frequentior adhuc in planitiebus mari propioribus (MacOw., 1010). Ad Bazuja Caffrariæ (Baur.).

(*b*) *Praticola*, pil. rufo squamoso (MacOw., No. 1428).

Ag. (Stropharia) melaspermus, *Bull. Fr. Ep.* 219.

Somerset East (MacOwan, No. 1389).

Ag. (Stropharia) olivaceo-flavus, *K. et M. Ow.*

Pileus carnosus, convexus, obtusus depressusve, lævis, glaber, olivacea-flavus; stipes cylindricus, farctus, basi turgescens, subbulbosus, et fibris validis solo affixus, ceterum fibroso striatus, pileo pallidior; annulus distans, lacerus persistens; lamellæ plano adnatæ, confertæ, albido-purpureæ, demum purpureo-nigricantes. Caro lenta, alba. Sapor et odor nullus.

In arenosis sæpe inundatis ad fluv. Klyn Visch River; McOw., Nos. 1324, 1385). P. Natal (Wood, No. 244).

Pileus (viscosus?) 4-6 centm. latus; stipes 5-8 cent. long, 2-5

mm. crassus. Epidermis pilei haud raro disrumpens, in quibusdam subviridescens, exsiccatione umbrina fit. Statura *Ag. stercorarii*, Fr., sed lamellæ angustæ.

Ag. (Stropharia) obturatus, *F. Ep.* 219.
Somerset East (MacOw.).

Ag. (Stropharia) semiglobatus, *Batsch. Fr. Ep.* 220.
In fimo pratorum, ad Somers. E. (MacOw., No. 1006).
Ut videtur, ubique terrarum obvius !

Ag. (Hypholoma) fasciculariis, *Huds. Fr. Ep.* 122.
P. Natal (Wood, No. 193).

Ag. (Hypholoma) capnolepis, *K.*
Pileus carnosus, hemisphærico expansus, alutaceus, strato subtili fibrilloso, fumoso vestitus, et hoc arcolatim disrumpente, squamulosus; stipes solidus, elongatus ; æqualis, basi bulbosus, fibrillis striatus, pallidus ; lamellæ adnatæ, ventricosæ, latissimæ, confertæ (in siccis) fuligineæ.
P. Natal (Wood, No. 337).
Pileus 2-3 unc. latus, stipes fere spithamaceus (5-7 unc.) 2 lin. crassus. Fungus nobilis a proximo *Ag. storea*, Fr., et aliis hujus gregis, indumento pilei et lamellis latissimis optime distinctus.

Ag. (Hypholoma) Candolleanus, *Fr. Ep.* 224.
Somerset E., ad pedem mont. Boschberg (MacOw., No. 1229).

Ag. (Psilocybe ?) tædiosus, *Kalch.*, in "Grevillea" IX., p. 18.
Natal ad Inanda (Wood, No. A. 393).
Ag. sarcocephalo, Fr., proximus, sed multo tenerior et stipite haud robusto distinctus.

Ag. (Psilocybe) semilanceatus, *Fr. Ep.* 231.
In solo pinqui mont. Boschberg ; inter arbusta (MacOw.).

Ag. (Psilocybe) squalens, *Fr. Ep.* 226.
P. Natal (Wood, No. 383).

Ag. (Psilocybe) atrorufus, *Schæff. Fr. Ep.* 230.
P. Natal (Wood, No. 193). Somerset E. (MacOw., No. 1378), var. *Montanus*, Pers. Fr. Ep. l. c. (Wood, No. 182).

Ag. (Psilocybe) fœnisecii, *Pers. Fr. Epi.* 227.
In hortis. Somers. E. (MacOw., No. 1006, *b.* 1368, 1372).
In graminosis stercoratis ad fluv. Klyn Visch River (No. 1323).
Sincere fatendum distinctionem fungorum siccatorum hujus gregis difficillimam esse nec indubiam !

Ag. (Psilocybe) udus, *Fr. Ep.* 228.
In inundatis, arenosis ad fluv. Klyn Visch River.
(MacOw., No. 1366, 1367, 1390).

Ag. (Psilocybe) ericæus, *P. Fr. Ep.* 228.
Somerset E. (MacOw.).

Ag. (Psathyra) corrugis, *Pers. Fr. Ep.* 231.
"Pileo pallide rubescente, granulato-nitente (atomato) fragili, per exsiccationem, cinereo-brunneo." MacOwan, in Sched.
In humidis, umbrosis, arenosis ripis flumin. Klyn Visch River, inter frutices (MacOw., No. 1322 et 1391).

Ag. (Psathyra) spadiceo-griseus, *Schœff.* *Fr. Ep,* 233.
"Fragilis, udus, pileo campanulato, demum applanato, fisso, brunneo (MacOwan, in Sched.).
In ligno putrido. Somerset East (MacOw., No. 1306).
P. Natal (Wood, No. 323, 336).

Ag. (Panæolus) separatus, *Linn.* *Fr. Ep.* 234.
In vetusto stercore silvarum, montis Boschberg.
(MacOw., No. 1007).

Ag. (Panæolus) papilionaceus, *Fr. Ep.* 236.
In fimo. P. Natal, Inanda (Wood, Nos. 379, 385).

Ag. (Panæolus) campanulatus, *Linn.* *Fr. Ep.* 236.
In terra stercorata, ad montem Boschberg, inter frutices (MacOw., No. 1012).

Ag. (Panæolus) fimicola, *Fr. Ep.* 237.
Somerset East (MacOw., Nos. 1089, 1183).

Ag. (Psathyrella) gracilis, *Fr.*
In pinquibus, ad Somers. E. (MacOw., Nos. 1202, 1379).

Ag. (Psathyrella) disseminatus, *Pers.* *Fr. Ep.* 244.
P. Natal. In pascuis humosis (J. M. Wood, Nos. 102, 400).
An *Ag. subtilis ? ob stationem ?*

Ag. (Psathyrella).
In solo humoso, locis apertis silvarum. Somerset E. (MacOw., Nos. 1373, 1376).
P. Natal (Wood, No. 382).

Coprinus punctatus, *K. et Cke.*, in "Grevillea" IX., p. 18.
Natal, leg. (Wood, No. 415).

Coprinus ovatus, *Fr. Ep.* 242.
In arena humida, post inundationem fluvii, Klyn Visch River (MacOwan, No. 1046).

Coprinus micaceus. *Fr. Ep.* 247.
Ad Bazuja Caffrariæ (Rev. Baur).

Coprinus truncorum. *Fr. Ep.* 248.
Ad truncos emortuos, juxta ripas fluminis, Klyn Visch River, pr. Somerset East (MacOw., No. 1214). P. Natal (Wood, No. 333).

Coprinus cinereus, *Schœff.* *Fr. Ep.* 246.
In fimo vaccino, Somerset E. (MacOw., 1214 pr. p.).

Coprinus curtus. *K. et M. O.*
E minimis, gregarius, fragilis. Pileo conico-campanulato, 5-15 mm. alto, striatulo, primum-sub lente-rubiginoso-furfuraceo, dein pulverulento, albido-griseo; stipite fistuloso, glabro, in majoribus 15 mm., in atris 3-5 mm. alto, albo, lamellae egriseo-nigrae, acie albicantes.
In solo humoso et fimo vetusto, inter frutices, ad pedem mont. Boschberg (MacOw., No. 1014).

Coprinus radiatus, *Desm.* *Fr. Ep.* 251.
Somerset East, in fimo (M.Ow.).

Coprinus plicatilis, *Curt.* *Fr. Ep.* 252.
Somers. E. (Mac.Ow. No. 1375). P. Natal (Wood No. 367).

Ag. (Coprinus) ephemerus, *Bull.* *Fr. Ep.* 252.
In velusto stercore ad fluv. Klyn Visch River (M.Ow. No. 1375). Berkl. Fung. Uitenhage, No. 12.

Bolbitius Boltoni. *Fr. Ep.* 254.
Affinibus robustior, pileo duas uncias et ultra lato, submembranaceo, margine, dense striato ; stipite æquali, basi modo incrassato, 6-10 cent. alto 4-5 mm. crasso, siccitate eximie striato ; lamellis ferrugineis.
In fimeto antiquo, prope Somers. E. (MacOw. No. 1242).
Lamellarum colore a typo tantisper recedit.

Bolbitius fragilis, *Linn.* *Fr. Ep.* 254.
Somerset East (M.Ow.).

Bolbitius bulbillosus. *Fr. Hym. cur.* 334.
Somerset East (MacOw.).

Bolbitius mitræformis, *Harv.* Berkl. Fung Decad in Hook. Lond. Journ. iii., 1877.
In vetusto stercose, fere in humum mutato in apricis graminosis silvarum varo.
Somerset East (MacOw., No. 1002).

Paxillus panuoides. *Fr.*
Afr. Austral leg. M.Owan.

Hygrophorus virgineus, *Jacq.* *Fr. Ep.* 327.
Somerset E. (M.Ow., No. 1364.)

Hygrophorus atro-coccineus. *K.*
Pileus convexus depressusve, coccineus, lamellis decurrentibus obscurioribus.
P. Natal (Wood No. 364).
Habitus H. coccinei, aut H. miniati.

Hygrophorus discolor. *K. et M.Ow.*
Pileus membranaceus, fragilis, convexus, umbonatus vel dipressus, rubro-aurantiacus; stipes cylindricus, fistulosus, albus; lamellæ rotundato-liberæ, subdistantes, latæ, ventricosæ, albæ, hinc inde lutescentes.
In campis, prope Somerset East (MacOw., 1231).
Habitus Hygr. conici, sed hoc minor, haud conicus. Siccus atrocinereus potius quam niger, nec nitens!

Cantharellus foliolum, *K.*
Pileus membranaceus, e resupinato reflexus, suborbicularis, glaber, albidus, siccitate pallide ochraceus vel rufescens, stipitello, excentrico vel sublaterati, evanescente ; lamellæ obtusæ, paucæ (4-5) vagæ, maxime distantes, venosæ, reticulatim conjunctæ.
In ramentis siccis, ad Somers. E. (MacOw).
Siccatus, colore et venis parum prominentibus, creberrime anastomosantibus folium aridum haud male refert. Cum Canth. retirugo Fr. inquibusdam congruit ; at lignatilis est, et nihil cinerei habet.

Marasmius Oreadoides, *Passer. Fr. Hym. cur.* 467.
In graminosis mont. Boschberg (MacO.).
Mar. Oreadi omnino similis, sed minor, et ob stipitem basi præmorsum, albovillosum huc potissimum referendus.

Marasmius splachnoides. *Fr. Ep.* 384.
Somerset East (MacOw.).

Marasmius rotula. *Fr. Ep.* 385.
In foliis putridis (MacOw.).

Marasmius filaris. *K. et M.Ow.*
Pileo membranaceo, conico-campanulato umbilicato papillato, 3-4 mm. lato, fuscescente, sulcato ; stipite institio, filiformi, pro ratione altisimo (6-7 cent.) e flocculoso glabrato, pileo obsbscuriore rufo-fusco, apice pallido ; lamellis adnatis, distantibus, angustis, albis.
In foliis putridis, ad radices fruticum, montis Boschberg (MacOw., No. 1100).
Circa papillam apicalem depressus et saepe insuper annulo prominente ornatus.

Marasmius saccharinus. *Fr. Ep.* 386.
In fol. putridis (MacOw.).

Lentinus Lecomtei. *Fr. Ep.* 368.
A descriptione l.c. differt stipite valde excentrica, brevi, coloreque subochraceo potius quam cervino ; sed Berkeley monet, se Lent. Lecomtei ex Hungaria habere ; hungaricus vero fungus de quo sermo esse potest, nil alind est quam multum ille vexatus Panus rudis Scer.= Panus Hoffmanni Fr. in litt.= Ag. Sainsonii Lev. (non Pan. rudis Quelet champ. de Jura tab. 17, fig 1) quem ad Lentinos pertinere jam pridem suspicabamur. Hic vero cum fungo Africano exacte congruit. Idem etiam in Rossia obvius est.

Lentinus Zeyheri. *Berkl. Uitenh., No.* 13. (*sub.* **L. capronato.** *Fr. Ep.* 389.)
In ligno mucido humi jacenti in silvis Boschberg (MacOw., No. 1078). P. Natal (Wood, 97).
A Berkeleyo l.c. optime descriptus! Pileus saturate castaneo-brunneus, fasciculato strigosus, squamosus vel fere nudus (= L. hemipsilus Kalchbr. olim.). Haud rarus videtur.

Lentinus fastuosus. *K. et M.Ow.*
Pileo coriaceo, late infundibutiformi vel urceolata, margine involuto, velutino-villoso setulosoque, saturate fusco-purpureo, stipite solido, lento, gracili, villoso, subconcolore ; lamellæ decurrentes, angustæ, sub-confertæ, acie integræ, basi et ad marginem anastomosantes, purpurascentes.
In ligno fabrifacto udo, sub tegmine stramineo casulæ cujusdam pr. Somers. E. (MacOw., No. 1333).
Pileus 4-7 cents. latus, stipes 6-9 cent. longus 4-5 mm. crassus, sursum incrassatus. Villi vel polius setæ molles, haud inordinate strigosæ vel fasciculatæ sed strictæ, comtæ, *nitidulæ.*

Lentinus Murrayi. *K et. M.Ow.*

E Cornucopioideis.—Pileo carnoso-coriaceo, tenui, primum fragili demum rigido, profunde infundibuliformi, margine inflexo, subobliquo, lævi, glabro, dilute cervino, infundo fere umbrino; stipite solido, brevissimo, subæquali, nudo; lamellæ in conum inversum longe decurrentes, sublineares, vix anastomosantes, acie integræ, pollidæ, siccitate rufescentes. Caro alba. Odor subanisatus.

C. B. Sp. ad., East London, leg. A. E. Murray (M.Ow., No. 1297).

Pileus 8-14 cent. latus; stipes 1-1½ cent. longus 5 mm. crassus. Lentino Sajor Caju = Fr. Ep. 393, proximus; differt tamen pileo haud striato, aut fisso et vere infundibuliformi, nec modo umbilicato!

Lentinus miserculus. *K.*

Pusillus, pileo coriaceo, rigido, convexo vel leviter modo umbilicato, concentrice rugoso tuberculatove, margine crenato-plicato, glabro, ferrugineo; stipite curto, tenui, pubescente, subconcolori; lamellis adnatis, ventricosis, acie subserratis pallidis.

Somerset East (MacOw.), No. 1296.

Pileus 1 cent. latus, stipes ½-1½ cent. longus, vix 2 mm. crassus. Nonnunquam testudineo-squamosus.

Lentinus Woodii. *Kalchbr.*

Pileo coriaceo-lento, subexcentrico vel prorsus laterali, irregulari, lobato, leviter striolato, glabro, albo-flavente; stipite solido, curto, deorsum incrassato, nudo, subtoruloso; lamellis longissime decurrentibus, confertis, angustis, strictis, acie integris, concoloribus.

P. Natal. Inanda (Wood, No. 118).

Proximus L. flori Meyer (Fr. Ep. 393), sed stipes non villosus neo lamellæ undulatæ.

Lentinus hyracinus. *K.*

Pileus carnoso-lentus, sessilis, semiorbicularis, basi angustatus, 2 cent. longus latusque, lævis, postice rugulosus, subtomentosus, antice glaber, umbrinus; lamellæ adnatæ, confertæ, angustæ, dentatæ, creberrime anastomosantes, pileo pallidiores.

Somerset East (MacOw.).

Inter Lent. ursinum F. et L. castoreum F. medius, a priore lamellis angustis, dentatis, nec laceris, a posteriore pileo haud elongato, vel margine involuto distinctus.

Xerotus caffrorum. *K et M.Ow.*

Pileus membranaceo-coriaceus, integer, convexus, late umbilicatus, radiatim rugosus, glaber, alutaceus; stipes farctus, subæqualis, concolor; lamellæ adnato-decurrentes, distantes, crassæ, obtusæ, ramosæ, immixtis paucis brevioribus, pallidæ.

In densis silvis, sub fruticibus mont. Boschberg (Mac.Ow., No. 1218, 1132, 1186). P. Natal, No. 371.

Pileus 2-4 cent. latus., stipes 4-9 cent. longus, 2-5 mm. crassus. —Solitarius et subcæspitosus.

Schizophyllum commune. *Fr. Ep.* 403.

Somerset East, ad truncum Rhois villosæ (MacOw.).

Schizophyllum flabellare. *Fr. Ep.* 403.
P. Natal (J. M. Wood, No. 93).

Anthracophyllum *de Cesat n.g.* (*Mycetum in itinere Borneensi a cl. Beccari lectorum Enumeratio. Neapol.*, 1879.)
Genus Marasmiis affine, hymenio extus intusque nigrescente, lamellis arescentibus, exsiccatione immutatis et ipso cultro duris, corneis (Cesat. l.c.). Genus hocce (= Plagiotus Kalch in Sched.) hoc tempore unicam modo speciem complectitur, quam cel. E. Fries ad Panum, cet. Léveillé ad Xerotum relegavit, inter quos ob sporas nigras habitum que alienum non sine difficultate intruditur.

Anthracophyllum nigrita, *Lev. K. Panus melanophyllus, Fr.* Natal, p. 6. *Xerotus nigrita. Lev. Anthracophyllum Beccarianum, de Cesat, l.c.*
Pileo tenui, tenaci, subsessili, orbiculari vel sublobato, radiatim sulcato, alutaceo-rufescente; stipitello brevissimo, evanescente; lamellis firmis, strictis simplicibus et furcatis, distantibus fuligineo-nigricantibus. Sporæ minima, globosæ nigræ.
P. Natal (Wood, No. 198).
Pileus 2-4 cent. latus, sulcis parallelis, ad modum Schizophylli in lobos radiantibus ornatus.

Tilotus lenzitiformis. *K. (provis).*
Stet hic,—ut ulteriori attentioni commendetur, sub nomine hoc fungus maxime paradoxus, Lenzitem simulans, sed ab hoc tota structura diversissimus.—Pileus *fomentarius*, suborbicularis, basi dilatata adnatus, azonus, mollissime velutino tomentosus; lamellis latis, distantibus, simplicibus dimidiatisve, fuligineo-nigricantibus, *æque ac pileus tomentosis!* Sporæ ?
P. Natal. (J. M. Wood, No. 94).
Pileus planiusculus, pollicaris, *cervinus una cum lamellis* (!) e fibris solidis, parce ramosis nodulosisque, contextus est. Procul dubio novi generis typus, sed-proh dolor unicum modo specimen adest et sporarum nullavestigia! Ceterum cum Lenzite umbrina Fr. multa habet communia.

Lenzites Palisoti. *Fr. Ep.* 1 p. 404. *Sub varies formis.*
In truncis, montis Boschberg leg.M.Ow., 1874 (No. 1066, 1065).

Dr. Ludwig Rabenhorst died at Meissen, on the 24th April, in his 76th year. Although his original work was very small, he will be remembered for the excellent exsiccati that he issued, for "Hedwigia," which he established and conducted, and for the useful manuals he edited.

THE CEDAR APPLES OF THE UNITED STATES.*

The scattered memoirs and observations of Professor Farlow on United States Fungi, and the careful manner in which he is known to pursue his investigations, at once obtains attention and respect for his communications. As a philosophical and scientific mycologist, he holds a position in his own country in which he is without a rival, and in Europe he finds a ready and willing audience whenever he speaks. Under these circumstances we welcome his monograph on the "Gymnosporangia of the United States," whether or no we agree with his conclusions. It is, unfortunately, too much the habit in these days to seek for the *new* rather than the *true*, and it becomes quite a relief to turn to writings like the present, in which novelties are forgotten in a patient investigation in search of the truth. If we open any recent Continental memoir, of only two or three pages, on a mycological subject, we find new theories, new genera, new combinations, new fancies, in nearly every paragraph, until we are driven to the conclusion that these authors can believe in nothing but that which is *new*. The "Lady Audley's Secret" and "Woman in White" type of science may have ardent admirers, as the originals have, but there still remain a few who have not "bowed the knee to Baal," and these will welcome the writings of Dr. Farlow.

The memoir before us commences with a history of the modern theory of alternation of generations as applied to the Uredineæ, in which it is remarked—"The views of De Bary and Tulasne were, as a general rule, accepted by all the leading mycologists of the Continent, but were not so readily received by those of Great Britain;" and again, referring to the connection between Uredo and other final forms, &c., "but British botanists remain more or less sceptical on the subject." Undoubtedly this is the fact, not because we are insensible to evidence, or are unduly prejudiced, but because, on the one hand, we recognise how easy it is for the eye to see that which it wishes to see, and, on the other, because our temperament does not lead us to catch up any new theory and try to shape facts into accordance with it, rather than judicially to balance facts, independently of theory. It may be true that evidence presents itself with different force to different minds. We have not accepted certain conclusions, because the evidence has not presented itself to our minds as conclusive. Take an example—that which is quoted by Professor Farlow is *Puccinia graminis*—it will serve as well as any other, by way of illustration. It is contended that the sporidia do not grow except on the barberry, and thereon produce *Æcidium Berberidis;* also that the

* "The Gymnosporangia, or Cedar Apples of the United States," by W. G. Farlow. "Anniversary Memoirs of the Boston Society of Natural History," 1880; 4to., p. 38.

spores of *Æcidium Berberidis* germinate on grasses, producing rust (*Uredo*), and finally *Puccinia*. We must admit that in all grasses there is an undoubted tendency to produce the *Uredo* and *Puccinia*, although many miles distant from a barberry, or even in countries where no barberry is known. Also, if any parasite at all is to be found on the living barberry, it is *Æcidium Berberidis*. Supposing that, experimentally, the *Puccinia* is sown on the barberry, and the result is the production of *Æcidium Berberidis*, what does this prove? Absolutely nothing! No one can possibly contend that it proves anything. Sow the spores of *Uredo filicum* on leaves of the gooseberry, and the result may be the production of *Æcidium Grossulariæ*. What is the inference? Absolutely nothing! In the one case, as in the other, the chain is broken. The toad spawn produces a newt or a lizard. It is *not* like producing like, and hence the evidence *must* be indisputable, and not problematical. There must be stronger evidence necessary to establish the fact of the development of an *Æcidium* from a *Uredo* spore than of an *Æcidium* from an *Æcidium* spore. In like manner there must be stronger evidence of a lizard being developed from the ova of a toad than from the ova of a lizard. Is there stronger evidence that the *Puccinia* sown on barberry really produces an *Æcidium* than would be required to prove that the *Æcidium* spores produced the *Æcidium*? It cannot be forgotten, it must not be ignored, that the parasite of the barberry naturally is the very one which is said to be produced experimentally. We contend that it would have made its appearance even had not the *Puccinia* spores been sown; that the supposed cause is not a true cause; that the true cause acted in opposition to the supposed cause. And what evidence is there to oppose to our allegation? For the sake of argument (as it applies to all those cases in which one supposed condition of a Uredine is passed on plants of one genus, and the ultimate condition upon another), we have an undoubted right to demand—not that the theory should be assumed, but that the fact should be incontrovertibly established—that *Puccinia* spores sown on barberry produce *Æcidium Berberidis;* that *Æcidium Berberidis* would *not* have been produced on that plant but for the sowing of the *Puccinia*. The same argument applies to the grasses and the *Æcidium* spores. Sow spores of the *Æcidium* upon young wheat, protect it from all other influences, and the result is the common *Uredo*, succeeded by *Puccinia*. This may well be the case, and yet the spores of the *Æcidium* may *not* have produced the *Uredo*. It is useless repeating the argument again. Every blade of wheat gives evidence of the presence of the *Uredo* without any sowing of *Æcidium;* and why multiply causes? If the sowing of the germs of one kind of parasite upon a host results in the production of another kind of parasite, and *not* the one sown, then the evidence must be produced in an unbroken chain, and must be positive, and not problematical, or the assumed cause cannot be accepted as a true cause. It is useless to call people

prejudiced or fools, because their minds are so constituted that they cannot believe contrary to evidence, or because they will not give up a belief, at command, without satisfactory evidence. It matters nothing to us which is the truth ; we hold to that which we conscientiously believe to be true until we are convinced of our error. If in our garden we sowed oats, and they persistently grew up and produced wheat, we do not think that we should be in haste to condemn any who dared to doubt our affirmation of such an extraordinary phenomenon, even if we had unusually strong evidence in our own support. Once, and for all, let us emphatically repudiate any insinuation that in these observations we have Dr. Farlow in view. We know each other better, and we have only taken advantage of this opportunity to justify our scepticism. It applies even more thoroughly to the *Gymnosporangia* and *Rœsteliæ*, and something of this Dr. Farlow must himself have felt when he wrote the last sentence of his memoir :—"If it should be shown that several of our *Rœsteliæ* are perennial—a fact true with regard to most of our *Gymnosporangia*—and to grow in regions remote from species of *Juniperus* and *Cupressus*, then one could not help feeling that any connection between the two genera was probably accidental rather than genetic." We have all possible respect and esteem for many of the men who have written their experiences on this subject. We have every belief in their integrity, that they fully believed every word that they have written ; and yet, with our own experience of the difficulties—the superlative difficulties—in experimental cultures, we are bound to accept the possibility of their having been deceived.

It is by far the most pleasant part of our duty to revert to the monograph before us, and to give it our unqualified approbation. Would that a few more of the mycologists of the day could be induced to forego their species-mongering and inordinate multiplication of synonomy—which is a burden and hindrance, and not a benefit—and devote themselves to work like this. Not a single species, and only one solitary name of a variety, has "*Farlow*" at the end of it. This is certainly not a consummation which would meet with the approval of our Continental friends. Here, perhaps, is the valid and substantial reason why the "sensational" is preferred to the "true." Our sympathies are with the latter.

At page 12 is an observation which we most cordially endorse. It is to the following effect :—"In spite of the fact that in certain details *G. Ellisii* differs from the majority of the other species of *Gymnosporangium*, it seems to me that Kornicke is not warranted in establishing a new genus *Hamaspora*, founded on two species—*G. Ellisii*, growing on *Cupressus thyoides*, and *Phragmidium longissimum* (Thüm), growing on *Rubus rigidus* at the Cape of Good Hope"—and so on to the end of the paragraph. Certainly the two species are not congeneric, and this would be evident to anyone examining them free of prejudice, and with any regard to natural affinity, as distinguished from artificial analogy.

Although not disposed entirely to concur in regarding *Phragmidium longissimum* as a good *Phragmidium*, we are prepared to contend for *Gymnosporangium Ellisii* as a *Gymnosporangium* with which the other has no natural relationship. Finally, we hope that Dr. Farlow will "go on and prosper" with the other and allied Fungi of the United States.

ILLUSTRATIONS OF BRITISH FUNGI.

The first part of this work contained 20 plates, in colours, principally of species in the subgenus *Amanita*. The second part, already issued, included 16 plates, principally of *Lepiota* and *Armillaria*. The third part, now being published, consists of *Lepiota* and part of *Tricholoma*. The fourth part, now in preparation, is almost entirely of *Tricholoma*. It is expected that a fifth part, including some of *Tricholoma*, and a portion of *Clitocybe*, will be issued during the current year. This will represent about 84 plates, and the same number of species of *Hymenomycetes*. An increased sale, of about fifty copies per part, would warrant an accelerated issue of six parts per annum, which the present sale would not justify. It is hoped that British Mycologists will, in this manner, show their appreciation of the practical value of such a publication, the like of which has never before been attempted at so moderate a price.

"Mycographia."—Enquiries have been made from time to time whether this work is intended to be proceeded with, and when? It has certainly been our intention to go on with the second volume, for which the drawings are made, but we have hesitated to venture on such a serious pecuniary undertaking, inasmuch as nearly fifty of the original subscribers to the first volume are either dead, removed, or from some other reason have ceased to stand as subscribers to Volume II. This would reduce the number to fifty *less* than for Volume I., and even *that* was inadequate. We are willing to forego any pecuniary return for the labour and anxiety of preparing such a work, but do not feel justified in being out of pocket in addition. As soon as we are put in possession of the names of fifty subscribers, so as to raise the number to a sufficient amount to cover the major expenses, we are quite ready to proceed with and complete the second volume. When it is remembered that we have laboured for twelve years on mycological publications, and never yet realized the cost of production (leaving remuneration entirely out of the question), the course now adopted will be admitted as prudent and justifiable.—M. C. Cooke.

AUSTRALIAN FUNGI.

By M. C. Cooke.

An enumeration of the species hitherto recorded as occurring in Australia, Tasmania, Lord Howe's Island, &c.—exclusive of New Zealand—with figures of some of the species described by the Rev. C. Kalchbrenner.

HYMENOMYCETES, *Fr.*

Ord. 1. Agaricini, *Fr.*

Gen. 1. Agaricus, *Linn.*

Ag. (Amanita) Preissii, *Fr. Pl. Preiss, p.* 131.
West Australia.

Ag. (Amanita) ananæceps. *Berk. Hook. Journ. vii., p.* 572.
Tasmania.

Ag. (Amanita) vaginatus, *Bull. Fr. Hym. Eur., p.* 27. *Cooke, Illust., t.* 12.
N. S. Wales, Queensland.

Ag. (Lepiota) procerus, *Scop. Fr. Hym. Eur., p.* 29. *Cooke, Illust. t.* 21,
Tasmania. Victoria, N. S. Wales, Queensland.

Ag. (Lepiota) excoriatus, *Schff. Fr. Hym. Eur., p.* 30. *Cooke, Illust., t.* 23.
W. Australia, Victoria, N. S. Wales, Queensland.

Ag. (Lepiota) clypeolarius, *Bull. Fr. Hym. Eur., p.* 32. *Cooke, Illust, t.* 38.
Queensland.

Ag. (Lepiota) subclypeolarius, *B. & C. Journ. Linn. Soc. x., p.* 283.
Victoria.

Ag. (Lepiota) cristatus, *A. & S. Fr. Hym. Eur., p.* 33. *Cooke, Illust. t.* 29.
Tasmania.

Ag. (Lepiota) lepidophorus, *Berk. & Br. Fungi Ceylon, p.* 498.
N. S. Wales.

Ag. (Lepiota) leontoderes, *Berk. & Br. Fungi Ceylon, p.* 499.
Queensland.

Ag. (Lepiota) rhyparophorus, *Berk. & Br. Fungi Ceylon, p.* 500.
N. S. Wales.

Ag. (Lepiota) granulosus, *Batsch. Fr. Hym. Eur., p.* 36, *Cooke, Illust., t.* 18.
Queensland.

Ag. (Lepiota) mesomorphus, *Bull. t.* 506, *f.* 1. *Fr. Hym. Eur., p.* 38.
Victoria.

Ag. (Lepiota) australius, *Fr. Pl. Preiss, p.* 131.
W. Australia.

Ag. (Lepiota) Beckleri, *Berk. Linn. Journ. xiii. p.* 156.
N. S. Wales.

Ag. (Lepiota) bubalinus, *Berk. Linn. Journ. xiii., p.* 156.
W. Australia.

Ag. (Lepiota) rhizobolus, *Berk. Hook. Journ.*, 1845, *p.* 42.
W. Australia.

Ag. (Lepiota) cheimonoceps, *Berk. & Curt. Cuban Fungi, p.* 283.
Queensland.

Ag. (Lepiota) aspratus, *Berk. Hook. Journ.*, 1847, *p.* 481.
N. S. Wales, Queensland.

Ag. (Armillaria) melleus, *Vahl. Fr. Hym. Eur., p.* 44. *Cooke, Illust. t.* 32.
N. S. Wales.

Ag. (Armillaria) subannulatus, *Batsch. Consp., f.* 17. *Fr. Hym. Eur.*, 41., sub. *A. robustus.*
Victoria.

Ag. (Tricholoma) nudus, *Bull., t.* 439. *Fr. Hym. Eur., p.* 72.
W. Australia, Tasmania.

Ag. (Tricholoma) maculentus, *Berk. Hook. Journ.*, 1845., *p.* 43.
W. Australia.

Ag. (Tricholoma) grossus, *Berk. Fl. Tasm., ii.*, 242.
Tasmania.

Ag. (Clitocybe) gilvus, *Pers. Fr. Hym. Eur.*, 95. *Fl. Dan., t.* 1011.
W. Australia.

Ag. (Clitocybe) inversus, *Scop. Fr. Hym. Eur.*, 97. *Bull., t.* 553.
Victoria, Tasmania.

Ag. (Clitocybe) schizophyllus, *Berk. Fl. Tasm. ii.*, 242.
Tasmania.

Ag. (Clitocybe) curtipes, *Fr. Hym. Eur. p.* 81, *Fr. Icon., t.* 48, *f.* 5.
Tasmania.

Ag. (Clitocybe) laccatus, *Scop. Fr. Hym. Eur.*, 108. *Bull. t.* 570, *f.* 1.
Victoria, Tasmania.

Ag. (Collybia) radicatus, *Relh. Fr. Hym. Eur.*, 109. *Grev. Fl. Scot., t.* 217.
W. Australia, S. Australia, Tasmania.

Ag. (Collybia) eradicatus, *Kalch. Grev. viii. p.* 151.
N. S. Wales.

Ag. (Collybia) morulus, *Berk. Fl. Tasm. t.* 181, *f.* 1.
Tasmania.

Ag. (Collybia) laccatinus, *Berk. Linn. Journ. xviii.*, 383.
Moreton Bay.

Ag. (Collybia) esculentus, *Wulf., in Jacq. Coll. ii., t.* 14, *f.* 1. *Fr. Hym. Eur.*, 121.
Victoria.

Ag. (Collybia) lepidopus, *Fr. Pl. Preiss, p.* 131.
W. Australia.

Ag. (Mycena) trachycephalus, *M. & Kalch. Grev. viii., p.* 151; (*Pl.* 142, *fig.* 1.)

Ag. (Mycena) tuberigena, *Berk. Linn. Journ. xiii., p.* 156.
Victoria.

Ag. (Mycena) crinalis, *Berk. Hook. Journ.*, 1846, *p.* 44.
W. Australia.

Ag. (Mycena) debilis, *Bull. t.* 518, *f. P. Fr. Hym. Eur., p.* 145. *Fr. Icon., t.* 82, *f.* 4.
N. S. Wales.

Ag. (Mycena) corticola, *Schum. Fr. Hym. Eur.*, 152, *Fr. Icon., t.* 85, *f.* 2.
N. S. Wales.

Ag. (Mycena) speireus, *Fr. Hym. Eur.*, 147. *Fr. Icon., t.* 78, *f.* 2.
N. S. Wales.

Ag. (Mycena) capillaris, *Fr. Hym. Eur.*, 153. *Fr. Icon., t.* 84, *f.* 6.
Victoria, Tasmania.

Ag. (Mycena) juncicola, *Fr. Hym. Eur.*, 154. *Fr. Icon., t.* 85, *f.* 6.
Victoria.

Ag. (Mycena) cohærens, *A. & S. Fr. Hym. Eur.*, 137. *Fr. Icon., t.* 80, *f.* 1.
Tasmania.

Ag. (Mycena) galericulatus, *Scop. Fr. Hym. Eur.*, 138. *Schæff. Icon., t.* 52.
Tasmania.

Ag. (Mycena) atrocyaneus, *Batsch. Consp., t.* 87. *Fr. Hym. Eur., p.* 141.
Tasmania.

Ag. (Mycena) interruptus, *Berk. Fl. Tasm., t.* 151, *f.* 2.
Tasmania.

Ag. (Mycena) silenus, *B. & Br., in Linn. Journ, xi., p.* 524.
Queensland.

Ag. (Omphalia) scyphiformis, *Fr. Hym. Eur.* 159. *Fr. Icon., t.* 75, *f.* 3.
Queensland.

Ag. (Omphalia) oniscus, *Fr. Hym. Eur.*, 158. *Fr. Icon., t.* 76, *f.* 3.
Queensland.

Ag. (Omphalia) pyxidatus, *Bull., t.* 568, *f.* 2. *Fr. Hym. Eur., p.* 157.
S. Australia.

Ag. (Omphalia) umbelliferus, *Linn. Fr. Hym. Eur.*, 160. *Fl. Dan., t.* 1015.
W. Australia, Tasmania.

Ag. (Omphalia) setipes, *Fr. Hym. Eur.*, 164. *Bull., t.* 560, *f.* 2.
Victoria, N. S. Wales.

Ag. (Omphalia) fibula, *Bull., t.* 186 ; 550, *f.* 1. *Fr. Hym. Eur.* 164.
W. Australia, S. Australia.

Ag. (Omphalia) hydrogrammus, *Fr. Hym. Eur.*, 154. *Fr. Icon.*, t. 71.
N. S. Wales.

Ag. (Omphalia) pumilio, *Kalch. Grev. viii., p.* 151, (*Pl.* 142, *fig*, 2.)
N. S. Wales.

Ag. (Omphalia) epichysium, *Pers. Ic. Pict., t.* 13, *f.* 1. *Fr. Hym. Eur., p.* 158.
Tasmania.

AUSTRALIAN FUNGI.

AUSTRALIAN FUNGI.

Ag. (Omphalia) carneo-rufulus, *Berk. Fl. Tasm., t.* 181, *f.* 3.
Tasmania.

Ag. (Omphalia) flavo-croceus, *Berk. Fl. Tasm. ii.*, 244.
Tasmania.

Ag. (Omphalia) integrellus, *Pers. Ic. et Desc., t.* 13, *f.* 1. *Fr. Hym. Eur., p.* 165. *Fr. Icon., t.* 75, *f.* 6.
Tasmania.

Ag. (Omphalia) gomphomorphus, *Berk. Linn. Journ. xviii., p.* 383.
Queensland.

Ag. (Omphalia) Mullerianus, *Berk., in Herb. Berkeley,*
Gipps' Land.

Ag. (Omphalia) gracillimus, *Weinm. Fr. Hym. Eur.*, 165. *Fr. Icon., t.* 75, *f.* 6.
Victoria.

Ag. (Pleurotus) lampas, *Berk. Hook. Journ.*, 1845, *p.* 44.
Ag. Noctilucus, Berk.
W. Australia, Tasmania.

Ag. (Pleurotus) candescens, *Müll. Linn. Journ. xiii., p.* 157.
Victoria.

Ag. (Pleurotus) illuminans, *Müll. Linn. Journ. xiii., p.* 157.
Victoria, N. S. Wales, Queensland.

Ag. (Pleurotus) Gardneri, *Berk. Hook. Journ.*, 1840, *p.* 427.
Queensland.

Ag. (Pleurotus) corticatus, *Fr. Hym. Eur., p.* 166.
Queensland.

Ag. (Pleurotus) atrocæruleus, *Fr. Hym. Eur.*, 179. *Saund. & Sm., t.* 6, *f.* 1.
W. Australia.

Ag. (Pleurotus) applicatus, *Batsch., Consp., t.* 125. *Fr. Hym. Eur.* 180.
W. Australia, Tasmania, Queensland.

Ag. (Pleurotus) scabriusculus, *Berk. Linn. Journ. xiii.*, 157.
Victoria.

Ag. (Pleurotus) eucalyptorum, *Fr. Pl. Preiss, p.* 131.
W. Australia.

Ag. (Pleurotus) limpidus, *Fr. Hym. Eur., p.* 177. *Fr. Icon., t.* 88, *f.* 3.
N. S. Wales.

Ag. (Pleurotus) caryophyllus, *Berk. Linn. Journ. xiii.*, 157.
N. S. Wales.

Ag. (Pleurotus) Guilfoylei, *Berk. Linn. Journ. xiii.*, 158.
N. S. Wales, Queensland.

Ag. (Pleurotus) perpusillus, *Fr. Hym. Eur.*, 181. *Fl. Dan., t.* 1295, *f.* 1.
W. Australia.

Ag. (Pleurotus) sordulentus, *B. & Br. in Herb. Berkeley.*
Queensland.

Ag. (Pleurotus) chioneus, *Pers. Myc. Eur. iii., t,* 26, *f.* 10, 11. *Fr. Hym. Eur., p.* 181.
W. Australia.

Ag. (Pleurotus) lenticula, *Kalch. Grev. viii., p.* 151, (*Pl.* 142, *fig.* 3).
Queensland.

Ag. (Pleurotus) læticolor, *Kalch. Grev. viii., p.* 151, (*Pl.* 142.*fig.* 4).
N. S. Wales.

Ag. (Pleurotus) luteo-aurantius, *Kalch. Grev. viii., p.* 151, (*Pl.* 142, *fig.* 5).
N. S. Wales.

Ag. (Pleurotus) imberbis, *Kalch. Grev. viii., p.* 152, (*Pl.* 142, *fig.* 6).
N. S. Wales.

Ag. (Pleurotus) abbreviatus, *Kalch. Grev. viii., p.* 152, (*Pl.* 142, *fig.* 7).
N. S. Wales.

Ag. (Pleurotus) tephrophanus, *Berk. Fl. Tasm. ii.,* 244.
Tasmania.

Ag. (Pleurotus) phosphoreus, *Berk. Hook. Journ., vii., p.* 572.
Tasmania.

Ag. (Pleurotus) diversipes, *Berk. Fl., Tasm. t.* 181, *f.* 4.
Tasmania.

Ag. (Pleurotus) Tasmanicus, *Berk. Fl. Tasm. ii.,* 245.
Tasmania.

Ag. (Pleurotus) bursæformis, *Berk. Fl. Tasm. ii.,* 245.
Tasmania.

Ag. (Pleurotus) affixus, *Berk. in Herb. Berkeley.*
On *Eucalyptus amygdalina.* Tasmania.

Ag. (Pleurotus) Baileyi, *B. & Br. in Herb. Berk.*
(= *Lentinus fulvo-atomatus,* B. & Br.)
Brisbane.

Ag. (Pleurotus) semisupinus, *B. & Br. Linn. Journ. xi.,* 529.
(= *Ag. nidulus,* B. & C.)
Brisbane.

Ag. (Pleurotus) Thozetii, *Berk. Linn. Journ. xviii., p.* 383.
Queensland.

Note.—*Agaricus palmatus,* Bull., t. 216, is transferred to *Crepidotus,* on account of the colour of the spores.
Agaricus hepatotrichus, Berk., is a species of *Lentinus.*
Agaricus arenicola, Berk., is *Panus.*

Ag. (Volvaria) xanthocephalus, *Berk. Hook. Journ.* (1845), *p.* 45.
W. Australia.

Ag. (Volvaria) Taylori, *Berk. Outl. p.* 140. *Fr. Hym. Eur., p.* 183. *Saund. & Sm. t.* 33, *f.* 1.
Tasmania.

Ag. (Pluteus) cervinus, *Schæff. t.* 10. *Fr. Hym. Eur., p.* 185.
Tasmania.

Ag. (Entoloma) panniculus, *Berk. Fl. Tasm. t.* 181, *f.* 5.
Tasmania.

Ag. (Nolanea) pascuus, *Pers., in Schæff. t.* 22[illegible]. *Fr. Hym. Eur., p.* 206.
Tasmania.

Ag. (Acetabularia) cycnopotamia, *Berk. in Linn. Journ. xviii., p.* 389.
Swan River.

Ag. (Pholiota) præcox, *Pers. Fr. Hym. Eur. p.* 217 *Latell. t.* 608.
W. Australia.

Ag. (Pholiota) allantopus, *Berk. Hook. Journ.* (1845), *p.* 45.
W. Australia.

Ag. (Pholiota) pudicus, *Fr. Hym. Eur. p.* 218. *Bull. t.* 597, *f.* 2, *R.S.*
Victoria.

Ag. (Pholiota) pumilus, *Fr. Hym. Eur. p.* 226. *Fr. Icon. t.* 105, *f.* 4.
N.S. Wales.

Ag. (Pholiota) mutabilis, *Schœff. t.* 9. *Fr. Hym. Eur. p.* 225.
Tasmania.

Ag. (Pholiota) eriogenus, *Fr. Pl. Priess. p.* 132.
W. Australia.

Ag. (Pholiota) congestus, *Kalch.* (*Pl.* 145, *f.* 27).
Fasciculari-cæspitosus. Pileus carnosus, campanulatus, pisi magnitudine (in specimine valde adhuc juvenili!) cum stipite deorsum *attenuato*, floccoso squamulosus, subfurfuraceus, fuscescens. Annulus floccosus. Lamellæ subdecurrentes, angustæ, confertæ, olivaceo-ferrugineæ. *Kalchb. in litt.*
Australia, Daylesford.
Habitus. *Ag. squarrosi* (Müll.), sed hoc multe minor. Indumentum floccoso-furfuraceum facile detergitur.

Ag. (Pholoota) effusus, *Kalch.*
Lignatilis. Pileus carnosus, subglobosus, obtusus, in arcotas verrucosas, polygonas abiens, albus; stipes concolor, solidus, cylindricus sursum leviter attenuatus lævis, basi in mycelium membranaceum, latum effusus. Annulus membranaceus, persistens, albus. Lamellæ adnatæ, confertæ, luteo-ferrugineæ. *Kalchb. in litt.*
Australia, Daylesford.

Ag. (Hebeloma) nudipes, *Fr. Hym. Eur. p.* 242. *Kalch. Hung. t.* 14, *f.* 4.
Queensland.

Ag. (Inocybe) lanuginosus, *Fr. Hym. Eur. p.* 227 (*nec. Bulliard*).
W. Australia.

Ag. (Inocybe) gomphodes, *Kalch. Grev. viii.*, 152, (*Pl.* 142, *f.* 8).
N.S. Wales.

Ag. (Flammula) sapineus, *Fr. Hym. Eur. p.* 251.
N.S. Wales, Queensland.

Ag. (Flammula) penetrans, *Fr. Hym. Eur. p.* 250.
S. Australia, Victoria, N.S. Wales.

Ag. (Flammula) picreus, *Fr. Hym. Eur. p.* 251.
Queensland.

Ag. (Flammula) flavidus, *Fr. Hym. Eur., p.* 248.
N.S. Wales.

Ag. (Flammula) peregrinus, *Fr. Pl. Preiss., p.* 132.
W. Australia.

Ag. (Naucoria) frusticola, *Berk. Linn. Journ. xiii., p.* 158.
S. Australia.

Ag. (Naucoria) Drummondi, *Berk. Hook. Journ.* (1845), *p.* 46.
W. Australia.

Ag. (Naucoria) Bowmanni, *Berk. Linn. Journ. xiii., p.* 128.
Queensland.

Ag. (Naucoria) anguineus, *Fr. Hym. Eur., p.* 255.
Queensland.

Ag. (Naucoria) nasutus, *Kalch. Grev. viii.,* 152, (*Pl.* 142, *f.* 9).
N.S. Wales.

Ag. (Naucoria) pediades, *Fr. Hym. Eur., p.* 260.
Australia.

Ag. (Galera) tener, *Schœff. t.* 70, *f.* 6-8. *Fr. Hym. Eur., p.* 267.
Victoria, Tasmania.

Ag. (Galera) hypnorum, *Batsch. Consp. f.* 96. *Fr. Hym. Eur., p.* 270.
S. Australia.

Ag. (Galera) conocephalus, *Bull. t.* 563, *f.* 1. *Fr. Epic.,* 205.
N.S. Wales.

Ag. (Tubaria) furfuraceus, *Pers. Fr. Hym. Eur., p.* 272.
Tasmania, Victoria.

Ag. (Tubaria) inquilinus, *Pers. Fr. Hym. Eur., p.* 274.
N.S. Wales.

Ag. (Crepidotus) globigera, *Berk. Linn. Journ. xiii., p.* 158.
Victoria.

Ag. (Crepidotus) lepton, *Berk. Hook. Journ.* (1845), *p.* 46.
W. Australia.

Ag. (Crepidotus) mollis, *Schæff. t.* 213. *Fr. Hym. Eur., p.* 275.
W. Australia, Victoria.

Ag. (Crepidotus) hepatochrous, *Berk. Hook. Journ vii.,* 574.
Tasmania.

Ag. (Crepidotus) interceptus, *Berk. Fl. Tasm. t.* 181, *f.* 6.
Tasmania.

Ag. (Crepidotus) auricula, *Berk. Fl. Tasm., p.* 246.
Tasmania.

Ag. (Crepidotus) insidiosus, *Berk. Hook. Journ. vii.,* 574. *Fl. Tasm. ii., p.* 246.
Tasmania.

Ag. (Crepidotus) cassiæcolor, *Berk. Fl. Tasm. ii., p.* 246.
Tasmania.

Ag. (Crepidotus) leptomorphus, *Berk. Fl. Tasm. ii., p,* 246.
Tasmania.

Ag. (Crepidotus) turbidulus, *Berk. in Herb. Berkeley.*
Tasmania.

Ag. (Crepidotus) palmatus, *Bull. t.* 216. *Fr. Hym. Eur., p.* 275.
Tasmania.

Ag. (Psalliota) campestris, *Linn. Fr. Hym. Eur., p.* 279.
S. Australia, Victoria, Tasmania, N.S. Wales, Queensland.

Ag. (Psalliota) arvensis, *Schæff. t.* 310-311. *Fr. Hym. Eur., p.* 278.
Tasmania.

Ag. (Psalliota) versipes, *Berk & Br.* (*?*)
Queensland.

Ag. (Stropharia) semiglobatus, *Batsch. f.* 110. *Fr. Hym. Eur., p.* 287.
W. Australia, S. Australia, Victoria, Tasmania, N.S. Wales.

Ag. (Hypholoma) dispersus, *Fr. Hym. Eur., p.* 292.
W, Australia, S. Australia, Tasmania.

Ag. (Hypholoma) fasicularis, *Huds. Fr. Hym. Eur., p.* 291. *Sow. t.* 225.
S. Australia, Tasmania.

Ag. (Psathyra) Sonderianus, *Berk. Linn. Journ. xiii.,* 159.
S. Australia.

Ag. (Psilocybe) spadiceus, *Schæff., t.* 60, *f.* 4-6. *Fr. Hym. Eur., p.* 302.
Tasmania.

Ag. (Psilocybe) ericæus, *Pers. Fr. Hym. Eur., p.* 298. *Fr. Pl. Preiss. p.* 132.
W. Australia.

Ag. (Psilocybe) atrorufus, *Schæff. t.* 234. *Fr. Hym. Eur., p.* 300. *Fr. Pl. Preiss, p.* 133.
W. Australia.

Ag. (Panæolus) papilionaceus, *Bull. t.* 561, *f.* 2. *Fr. Hym. Eur., p.* 311.
Victoria.

Ag. (Panæolus) phalænarum, *Bull. t.* 58. *Fr. Hym. Eur., p.* 310.
S. Australia.

Ag. (Panæolus) campanulatus, *Linn. Fr. Hym. Eur., p.* 311. *Bull. t.* 561, *f.*, 2 L.

Ag. (Psathyrella) trepidus, *Fr. Hym. Eur., p.* 314. *Pers. Myc. Eur. iii. t.* 29, *f.* 1.
S. Australia.

Ag. (Psathyrella) hiascens, *Fr. Hym. Eur., p.* 314. *Bull. t.* 552, *f.* 2, F.G.
Queensland.

Ag. (Psathyrella) disseminatus, *Pers. Syn.,* 403. *Fr. Hym. Eur., p.* 316.
W. Australia, Tasmania, Queensland.

BRITISH PALMELLACEÆ.

It appears to us that a preliminary list of the *Palmellaceæ*, hitherto recorded for the British Isles, would be useful as a basis for a more complete and perfect catalogue. It is universally acknowledged amongst us that we are deplorably ignorant of what Fresh Water Algæ have been found (except Desmids and Diatoms) since the time of Hassall's work. A first step will, therefore, be an imperfect one, but without a first, we can scarce hope for a second.

Exemosphœra viridis, *DBary, Rahh. Alg. iii., p.* 24.
Chlorosphæra Oliveri, Henf. Micr. Jour., 1859, p. 25.

Pleurococcus vulgaris, *Men. Rab. Alg. iii., p.* 24.
Chlorococcus vulgare, Grev. Sc. Crypt. Fl., t. 262.
Protococcus vulgaris, Kutz. Hass. t. 81, f. 5.

Pleurococcus mucosus, *Rabh. Alg. iii.,* 26.
Hæmatococcus theriacus, Hass. t. 78, f. 9.

Glœocystis ampla, *Kutz. Rab. Alg. iii.,* 29.
Pleurococcus superba, Micr. Journ., 1866, p. 63.

Glœocystis adnata (*Huds.*). *Rab. Alg. iii.*, 31.
Berkeley's Gleanings, t. xv., f. 2.

Glœocystis vesiculosa, *Nag. Rab. Alg. iii.*, 29.
Requires confirmation.

Urococcus Hookerianus, *Berk. Rabh. Alg. iii.*, 31. *Hass. t.* 80, *f.* 4.

Urococcus insignis, *Has., t.* 80, *f.* 6 a. b., under *Hæmatococcus.*
Rabh. Alg. iii., p. 31.

Urococcus Allmanni, *Hass., t.* 80, *f.* 3., under *Hæmatococcus.*
Rabh. Alg. iii., p. 32.

Urococcus cryptophilus, *Hass., t.* 80, *f.* 1., under *Hæmatococcus.*
Rabh. Alg. iii., p. 32.

Palmella mucosa, *Kutz. Rab. Alg. iii., p.* 33.

Palmella Mooreana, *Harv. Rabh. Alg. iii., p.* 34.
Coccochloris Mooreana, Hass. t. 78, f. 1. *a, b.*

Palmella hyalina, *Breb. Rabh. Alg. iii., p.* 33. *(Grev. Sc Crypt. Fl., t.* 247?)

? Zooglœa termo, *Cohn. Rabh. Alg. iii.*, 35.

Tetraspora bullosa, *Ag. Rabh. Alg. iii., p.* 38. *Eng. Bot., t.* 2405.
Ulva bullosa, Hass., t. 78, f. 13.

Tetraspora gelatinosa, *Desv. Rabh. Alg. iii., p.* 40.

Tetraspora lubrica, *Ag. Rabh. Alg. iii., p.* 41. *Eng. Bot., t.* 2407 *Hass., t.* 78, *f.* 10.

Tetraspora flava, *Hass., t.* 78, *f.* 11. *Rabh. Alg., iii., p.* 42.

Botryococcus Braunii, *Kutz. Rabh. Alg. iii., p,* 43. *Micr. Journ.*, 1870, *p.* 88.

Apiocystis Brauniana, *Nag. Rabh. Alg. iii.*, 43. *Fresen. Beitr., t. xi., f.* 1-20. *Henfrey, Micr. Journ.*, 1856, *t. iv., f.* 26, 27.

Rhaphidium aciculare, *Braun. Rabh. Alg. iii., p.* 45.
Ankistrodesmus acutissimus, Arch. (1861), t. ii. f. 44-56.

Rhaphidium falcatum *(Corda). Rabh. Alg. iii., p.* 45.
Ankistrodesmus falcatus, Ralfs. Desm., t. 34, f. 3.

Rhaphidium duplex, *Kutz.*
R. polymorphum, d. *sigmoideum*, Rabh. Alg. iii., p. 45.
Scenedesmus duplex, Ralfs. Desm., t. 34, f. 17.

Dictyosphærium Ehrenbergianum, *Nag. Rabh. Alg. iii.*, 47. *Micr. Journ.*, 1866, *p.* 127.

Dictyosphærium reniforme, *Buln. Rabh. Alg. iii., p.* 47. *Micr. Journ.*, 1868, *p.* 65.

Dictyosphærium constrictum, *Archer. Micr. Journ.*, 1866, *p.* 127. *Micr. Journ.*, 1872, *xii., p.* 422. 1875, *xv., p.* 415.

Hormospora ramosa, *Thw. Rab. Alg. iii., p.* 49. *Harv. Phyc. Britt., t.* 213.

Hormospora transversalis, *Breb. Rabh. Alg. iii., p.* 49. *Micr. Journ.*, 1867, *p.* 172. 1871, *p.* 98.

Hydrurus Ducluzelii, *Ag. Rabh. Alg. iii.*, 50. *Hass. t.* 77, *f.* 3.

Nephrocytium Agardhianum, *Nag. Rabh. Alg. iii.*, 52. *Micr. Journ.*, 1866, *p.* 72.

Oocardium crustaceum *(Hass.)*
Lithonema crustaceum, Hass., t. 65, f. 3.

Cosmocladium saxonicum, *DBary. Rabh. Alg. iii.*, 54. *Micr. Journ.*, 1867, *p.* 298.

Mischococcus confervicola, *Nag. Rabh. Alg. iii.*, 54.
Specimen from Rev. R. C. Douglas.

The Editor solicits well authenticated additions to the foregoing list, with enumeration of localities.

MIMICRY IN FUNGI.

By The Editor.

For thirty or forty years the term "mimicry" has been applied to certain resemblances in plants to those of other species often widely separated from them. It has been objected that the term implies a conscious imitation, of which plants are incapable, and hence another term, that of "homoplasy," has been proposed, but not generally adopted; therefore, with all its imperfections, we prefer to adhere to the one which is best known. We will not assume that the resemblances to which we wish to call attention are other than remarkable coincidences, but even as such they are worthy of note. Although a number of instances have been indicated amongst flowering plants, very slight attention has been paid to these coincidences in cryptogams. Nevertheless, several instances have been adduced by Mr. Worthington Smith,* to which others may be added. These are chiefly confined to the Agaric family, and although some of them striking, they are scarcely so satisfactory as they would have been had the resembling plants been further removed from each other. Thus, one poisonous species, *Agaricus, Hebeloma, fastibilis*, greatly resembling in appearance the edible mushroom, *Agaricus, Psalliota, campestris*, came up in great numbers upon a mushroom bed, and might have caused a disastrous result, had not the fact been detected by an adept. Another instance was that of a mass of fungi which also made their appearance on a mushroom bed. At first sight these closely resembled the variety of an edible species which not unusually comes up in clusters on old beds. It has white spores, with a lobed and undulated white pileus (*Agaricus, Clitocybe, dealbatus*). The imitating fungus had the same wavy cap, white colour, and fungoid odour, but the spores were pink, and its structural features were distinctly those of quite a different species (*Agaricus, Clitopilus, orcella*). In this instance both species were quite innocuous. Two wholly distinct but very similar fungi commonly grow together on wood ashes, or scorched places, where charcoal has been burnt; these are *Cantharellus carbonarius* and *Agaricus, Collybia, atratus*. In similar localities, and under like conditions, two other diverse fungi are ordinarily found growing together, *Agaricus, Flammula, carbonarius* and *Agaricus, Flammula, spumosus*, but these are very closely allied species. Similarly also the closely allied *Agaricus, Hypholoma, fascicularis* and *Agaricus, Hypholoma, capnoides*, or another pair, *Agaricus, Flammula, alnicola*, and *Agaricus, Flammula, conissans*, are

* "Gardener's Chronicle," February 10, 1877.

scarcely unexceptional instances, as compared with each other, but either of the first may be taken with either of the last pair, and the coincidence of colour, form, size, mode of growth, and even habitat, is complete. With any of these the recently described *Agaricus, Clitocybe, Sadleri*, with white spores, have a striking resemblance. So that here we have five yellow species found growing on wood, to which three or four others might be added, were they not so closely allied to those already named,* and an ordinary observer would regard all as the same species. There is, however, a small Agaric which is known to the majority of mycologists from its strong odour of stinking fish (*Agaricus cucumis*). It grows on the ground and upon fragments of dead wood, and has red-brown spores. Yet there is an imitator in a small fungus with white spores found in just the same localities with the identical fishy odour. According to all authority and experience the difference in the colour of the spores is not a mere difference of species, but indicates quite a separate and distinct group of species.

Two other species, one having white spores (*Agaricus, Clitocybe, parilis*) and the other pink spores (*Agaricus, Clitopilus, popinalis*), have very strong external resemblances, and yet they are often found growing together. And two very similar forms, each with an excentric stem, found growing on trunks, are so much alike in general aspect, that it is absolutely impossible to distinguish the one from the other, except by the colour of the spores, which, in one instance, are white (*Agaricus, Pleurotus, ostreatus*), and the other rosy (*Agaricus, Claudopus, euosmus*). They will grow together on the same tree, and in the same season of the year, whereas the white spored species is edible, and the pink spored one is said to be deleterious.

We might also instance *Agaricus, Tricholoma, nudus*, a handsome violet species, which, when well grown, is scarce to be distinguished from *Cortinarius violaceus*, except that, in the former, the spores are white, and in the latter rusty. Then also there are *Agaricus, Tricholoma, russula*, and *Hygrophorus erubescens*, often so much alike that some mycologists contend that both are the same species. A similar remark applies also to *Agaricus, Mycena, balaninus* and *Marasmius erythropus*. In fact, we need not multiply instances, as every mycologist knows from experience that very many of the species have their analogues in other sections from which, at a casual glance, it is difficult to distinguish them.

Taking a still wider range of comparison, the *Balanophoreæ*, a family of flowering plants, are in their parasitic habits, form, colouring, and odour, close imitators of fungi. And even if we confine ourselves to the Cryptogamia, we find amongst Algæ, in the species of *Nostoc*, a great likeness to *Tremella* amongst fungi. And so again in Lichens, we have *Lecidea* scarcely distinguishable, except by experts, from *Patellaria*, a genus of fungi. And *Bœomyces* amongst Lichens resembles *Stilbum* in Fungi, as also the Graphideous Lichens are imitated in *Hysterium*, and *Platygrapha* in

* As *Ag. inopus, Ag. epixanthus* and *Ag. elæodes.*

Stictis. Equally startling are the resemblances between widely separated groups of fungi, as particularly the entire Hypogæous *Gasteromycetes*, which in form, size, odour, habit, and all save fructification, imitate the Truffles (*Tuberacei*). *Podaxon* again, in appearance, resembles *Coprinus;* and *Hypolyssus* might be mistaken for an immature *Crucibulum*. *Verpa* has the form of a *Phallus*, but deficient in a volva. The largest species of *Wynnea* might almost be mistaken for a *Sparassis*, if the fruit were not examined. And *Clavaria* has its club-shaped forms repeated in *Cordyceps* and *Geoglossum*, with its branched forms in *Lachnocladium*. The species of *Craterellus* are not unlike large *Peziza*, and the smaller forms of the latter genus are represented in *Cyphella*, where some correspond to *Hymenocypha*, others to *Mollisia*, and others to *Dasyscypha*.

We have not designed to do more than to suggest a subject for reflection, and not by any means to exhaust it. Neither shall we attempt to demonstrate the "why and wherefore" of such coincidences. For the present we are content to regard them simply as *coincidences*, although, in some cases, so striking that we are loth to consider them accidental, but that they have a cause, and are a mystery which we are at present unable to account for or explain.

GENETIC RELATIONS OF ALGÆ.

The Editor of the "Royal Microscopical Journal" has given* a *resumé* of P. Richter's suggestions† as to the genetic connection of certain Unicellular Phycochromaceæ, which will be read with interest, in connection with our list of Palmellaceæ. "Whether various forms of unicellular algæ, hitherto considered distinct, and ranged under the genera *Glœacapsa*, *Chroococcus*, *Aphanocapsa*, *Glœothece*, and *Aphanothece*, are not really genetically connected, displaying a kind of polymorphism; a form with but slightly encysted cells *(Aphanocapsa)* intervening between one with encysted spherical *(Glœocapsa)* and one with encysted cylindrical cells *(Glœothece* and *Aphanothece)*. A similar relationship has, in fact, already been suggested by Naegeli in his 'Einzelligen Algen.'"

The form previously described by the author under the name *Aphanothece caldariorum*, presents an intermediate form between that genus and *Glœothece*, and would appear to be completed in its cycle of development with two other forms named by A. Braun *Glœothece inconspicua* and *Aphanocapsa nebulosa*, being a maturer condition of the first of these two. In the same way A. Braun's *Aphanocapsa biformis* may be shown to occur in three different forms.

The lowest form of the Phycochromaceæ is the naked *Aphanocapsa* condition, corresponding to *Palmella* among the Chlorophyllophyceæ. From this naked or only slightly encysted condition is

* "Journal of Royal Microscopical Society," 2nd ser., Vol. i., p. 291.
† "Hedwigia," xix. (1880), pp. 169-171, and 191-6.

developed the *Glæocapsa* or *Glœcystis* form with several gelatinous envelopes; the *Chroococcus* type, when the investment is altogether wanting, or when there is only a single vesicular envelope, the cœnobium types. The *Glæocapsa* type is specially adapted for exposure to the air, and growth upon a comparatively dry substratum; the cœnobium type is developed in water; the *Chroococcus* type in water, or on a moist substratum in the air. With this is connected the cylindrical form, a higher stage, because it displays a differentiation in the direction of growth, and a development towards the filiform condition. This is not always developed, and may be distinguished into stable and unstable forms; the latter may occur in two or three varieties, and may go through the following successive conditions:—

1.—Stable *Aphanocapsa* and *Palmella*.

2.—*Aphanocapsa* and *Palmella* which have attained to *Glæocapsa*, *Glæocystis*, or cœnobium type, but which always revert to the naked solitary spherical form.

3.—Stable *Glæocapsa*, *Glæocystis*, *Chroococcus*, and cœnobium forms, without reversion *(Merismopedia)*.

4.—Cylindrical forms, the generations of which pass through the solitary spherical *(Aphanocapsa* and *Palmella)* condition, as well as the *Glæocapsa* and similar forms.

5.—Cylindrical forms which pass through only the *Glæocapsa* and similar forms.

6.—Cylindrical forms, the generations of which revert to the *Aphanocapsa* and *Palmella* condition, while the *Glæocapsa* or any similar form is suppressed.

7.—Stable cylindrical forms *(Synecococcus.)*

No reference is made in the above to the passage of *Glæocapsa* into the encysted filiform conditions of *Sirosiphon* corresponding to *Palmodactylon* and *Hæmaspora* among the Chlorophyllophyceæ.

There is an undoubted feeling amongst Algologists in favour of some such relationship as that indicated by Richter, and any satisfactory demonstration of such genetic connection in the *Phycochromaceæ* and the *Chlorophyllophyceæ*, would obtain adhesion.

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THE

BOTANICAL RECORD CLUB:

PHANEROGAMIC AND CRYPTOGAMIC.

LIST OF OFFICERS.

Referees:

CHARLES CARDALE BABINGTON, M.A., F.R.S., F.L.S., &c. (For Rubi, Characeæ and Flowering Plants generally.)

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Secretary and Treasurer:

CHARLES BAILEY, F.L.S., Ashfield, College Road, Whalley Range, Manchester.

REVISED

RULES AND REGULATIONS.

Sanctioned by the Members, 1880.

I. The Botanical Record Club shall be an association of persons desirous of forwarding the purposes for which the Club was (in 1873) formed, the condition of membership being a subscription to the funds.

II. The objects of the association shall be to verify, register, and publish annually such facts (relating to the horizontal or vertical distribution of British Plants) as may be furnished for the purpose by the members, and as seem to merit publication either as (1) hitherto unpublished (for example, a *fresh station* for a plant, with a comital census at least under sixty, occurring in a county for which it may be already on record); or (2) as additional to the items tabulated in Mr. H. C. Watson's works: *Compendium Cybele Britannica*, its *Supplement*, and *Topographical Botany;* and Moore & More's *Cybele Hibernica;* or (3) as interesting and worthy of repetition by reason of previous confusion, uncertainty, or reported extinction.

III. Since there is for the Mosses and Hepaticæ no existing compendium of published data analogous to those above mentioned for Phanerogamia and the Vascular Cryptogams, it shall be an aim of the Club to work out and tabulate the distribution throughout Britain of such lower Cryptogams, effecting this, first, by the successive compilation and printing of moss and hepatica florulas for each county; and, second, by subsequent addenda to such comital lists as may have been previously issued.

IV. A third object of the Club shall be the exemplification of geographic plant-distribution (first phanero-, then crypto-gamic) by means of outline county maps, so displayed as to indicate the various 'types' of distribution, best discernible in such way, for selected representative species.

V. It shall be an essential characteristic of the work of the Club that every record must be qualified for a place in the annual Report by a Voucher for its accuracy and bona-fide nature—in the shape of a well-selected specimen (from the locality specified on its label) of a size and character sufficient for its safe identification. These vouchers shall alone form the material for the Report, save and except such manuscript notices of extinctions of species, or of errors requiring correction, as it may be found necessary to publish.

VI. The plant contributions of each season, after usage for the Report, shall become Government property, and with that intention shall each year be forwarded direct to the Royal Herbarium of Kew; and, being thus disposed of, shall be no longer the property of the Club in any sense, although the collections shall be open to the inspection of any member giving sufficient notice, and complying with such regulations as may govern like portions of the National Herbaria.*

VII. The management of the affairs of the Club shall devolve, in their several capacities, upon the following officers :— Editor of Records, Secretary and Treasurer, and such Botanical Referees as may be appointed from time to time by the Editor to assist in the determination of species.

On all matters in dispute, concerning the polity or well-being of the Club, these Officers and Referees shall form an Executive Committee, to whose counsels shall be left such elections of

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* Note.—Director Sir J. D. Hooker has given his consent to this annual acceptance of the Club's plants by the Kew authorities; and it is a suggestion of Mr. Baker's that they should ultimately be incorporated with the Watsonian Herbarium when that is received, supplementing it as they do.

officers in place of resignations, such adjustments, decisions, or general appeals to the members. as it may be thought wise and necessary to make.

VIII. The Botanists able and willing to act as Botanical Referees must be members of this Club; and shall be chosen, each one upon the ground of his special study of, and acquaintance with, some difficult class or genus, or critical group of British Plants.* All contributed specimens in regard to which the Editor of Records is unable to satisfy himself, or feels any doubt about, shall be submitted to a Referee, who shall settle finally whether it appear in the Report of that year, or whether the record be deferred for fuller information or ampler material.

IX. The duties of the Editor of Records shall include the safe keeping, verification, and arrangement of the plants confided yearly to his care for the time being, for the special purpose of enabling him to compile the Report. Having, with the assistance of the several Referees, duly scrutinised, verified, and decided (under Rule II.) upon the eligibility or unfitness of each separate record for a place in the Report, the Report shall then be prepared in such form as seems to him best; and, when finished, the manuscript shall be forwarded to the Secretary for his order as to its printing. When in type, every specimen voucher which represents a record in the Report shall be forthwith sent to Kew by the Editor. It shall not be necessary to mount or forward to Kew those contributed specimens notices of which are not eligible (under Rule II.) for the Report, or the records of which are to be deferred for any reason, such plants being superfluities for the purposes of the Club.

X. The duties of the Secretary and Treasurer shall be to collect the subscriptions; to keep the funds of the Club, its expenditure vouchers, and other accounts; and to authorise all

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* NOTE.—Referees will thus, whilst not without power of direction, &c., in crises of the Club's history, hold the honourable position of Experts or Consultants, and so contribute not a little to the trustworthiness of the general Record.

printing. He shall also attend to the publication, sale, or distribution of all Reports, Maps, Circulars, Catalogues, Moss-envelopes, &c., issued by the association; and pay all accounts against the Club for work done, or expense incurred, with and by his sanction and with the knowledge of the Editor of Records.

XI. Membership in this Club shall be of two kinds:—Honorary (or non-contributing) and Ordinary (or working) members.

Honorary members need not contribute any specimens, but shall subscribe annually a sum of not less than ten shillings.

Ordinary members shall subscribe not less than five shillings annually, and shall also send annually plants as defined in Rules II. and III.*

XII. All plants contributed shall be in good condition, and shall as far as possible represent unmistakeably the species they are sent to illustrate; but a specimen need not necessarily be in flower or have a root, &c., if the safe determination of the species is not thereby endangered. Specimens in such a bad or fragmentary state as to be nameable only with difficulty or doubt shall be inadmissible. Only one example of any plant need be sent where the necessary requirement as to its condition is fulfilled. Where the intention is to show some variation or peculiarity, a range of specimens may be desirable; but a number of typical specimens from one and the same station, accompanied by only one label, tends to favour admixture and confusion.

XIII. With each plant—if a Phanerogam or Fern—must be sent a Label of fair size, $4\frac{1}{2}$ inches across by $3\frac{1}{2}$ inches deep; upon which, leaving a space of 1 inch at the top for the official Stamp of the Club to be impressed, must be written the name (where known), but at least the locality and *kind* of station

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* NOTE.—It is hoped, however, that all 'working' or ordinary members who can afford it will contribute the larger sum—entitling them to two copies of all Reports—seeing that the expenses of the Club for printing and lithographing are proportionately heavy, owing to the somewhat limited issue of its publications.

(*i.e.*, natural wood or thicket, plantation or osier holt, waste sandy or grassy ground, warren, heath, bog, marsh, wall top, hedge or lane, pasture or meadow; discriminating between clayey, sandy, and peaty soil), where gathered, the date when and the county or vice-county area in which it grew, together with the name of the collector. The special printed label hitherto in use shall be abandoned; and, in place of it, to prevent possibility of appropriation, each label shall, as received by the Editor, be impressed with the official stamp of the Club.

Mosses or Hepaticæ shall not be sent loose, but each one be enclosed in a special Envelope-Label, designed to keep each species secure and separate, and easily accessible, whilst at the same time facilitating arrangement on sheets of herbarium paper, to which they may be readily affixed. Particulars of the locality, &c., to be written upon the face of the envelope-label, below the down-turned overlap. A sufficient supply of these envelopes shall be made to each member desirous of contributing county series, by the Secretary or Editor, free of charge.

XIV. This association shall, from time to time, as need arises, issue revised editions of 'The London Catalogue of British Mosses' already published by the Club. With the second edition shall be included a Catalogue of the British Hepaticæ, drawn up or revised by competent authority. Should it at any time become desirable, this Club shall publish similar Catalogues of Lichens, Fresh-water Algæ, Fungi, &c.

XV. Subscriptions must be forwarded to the Treasurer prior to the 31st December of each year.

XVI. Parcels of plants shall be forwarded, carriage or post paid, to the Editor of Records, in no case later than the 31st of December in each year, and as much earlier (after the close of the collecting season) as possible.

XVII. All members of the Club shall receive from the Secretary, post paid, a copy of the yearly Report, together with such sets of Maps or Catalogues as may be published; always provided that the subscription for the previous year be not in arrear.

Further, it shall be an instruction to the Referees, Editor, and Secretary, to distribute at their discretion copies of the Club's publications to such persons and institutions as they may deem desirable, in addition to the following Libraries and Journals:—The Royal Herbarium, Kew; the British Museum Botanical Department; The British Museum General Library; the Linnean Society; the Library of the Edinburgh Botanical Society; and the Editors of 'Nature', 'The Journal of Botany', 'Grevillea', &c.

Duplicates of back Reports may be purchased by members at half price of the Secretary; and by non-members on payment of a sum equal to the subscription for the year in which they were issued. Extra copies of all General Catalogues will be published for general sale at sixpence each, and these, together with Reports (5/- each,) for 1879 and onwards, may be obtained from David Bogue, 3, St. Martin's Place, Trafalgar Square, W.C.; but such maps illustrating plant distribution as the Club may publish will only be issued in consecutive sets or series to continuing members, as the officers of the Club may determine.

James Collins and Co., Printers, 76, King Street, Manchester.